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ABSTRACT

A study of the environmental impact of the construction of a second community college on a site adjacent to the City of Novato in Marin County, California, is presented. The five sections of the report are as follows: I. Project Description and Purpose: A. The Proposal; B. Purpose of the Project; C. Need for the Project; D. History of the Project; E. General Description of the Area; F. The Development of the Site; G. The Construction of Buildings; H. Summary; II. Environmental Impact and Mitigation Measures: A. Impact on Surface; B. Impact on Vegetation and Wildlife; C. Impact on Drainage; D. Impact on Traffic and Mitigation Measures; E. Impact on Air Quality; and F. Impact on Housing and Mitigation Measures; III. Alternatives; IV. Relationship between Local Short-Term Environmental Uses and Maintenance and Enhancement of Long-Term Productivity; and V. Irreversible Environmental Effects. Thirty exhibits and six references are provided. (DB)

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ED 073752

Environmental Impact Report

November 15, 1972

JC 730 059

UNIVERSITY OF CALIF.
LOS ANGELES

MAR 30 1973

CLEARINGHOUSE FOR
JUNIOR COLLEGE
INFORMATION

INDIAN VALLEY COLLEGES PROJECT

MARIN COMMUNITY COLLEGE DISTRICT

November 20, 1972

TO: Board of Trustees

FROM: Superintendent/President

SUBJECT: The Environmental Impact Report

The Environmental Impact Report for the Indian Valley Colleges project has been prepared in keeping with the guidelines for such statements under the provisions of the Environmental Quality Act of 1970.

The report has been prepared by Dr. Ernest H. Berg, President, Indian Valley Colleges in consultation with Mr. Dale A. Fleming, Director of Planning for the Marin Community College District. The data included in the report is based upon information provided from many sources including Neptune and Thomas Associates, project architects; Sasaki Walker, landscape consultants; representatives of the Novato Planning and Public Works Departments; representatives of the County of Marin Planning and Public Works Departments; representatives of the Marin County Transit District; and others.

County Counsel has advised that a public hearing be held concerning the Environmental Impact Report. In order that interested organizations and individuals can review the information included in the report, copies have been circulated as follows:

Lt. Governor's Office
Novato City Planning Department
Novato City Public Works Department
Marin County Planning Department
Marin County Public Works Department
Marin County Transit District
County Superintendent of Schools
Novato Advance
Pacific Sun
Independent Journal
College of Marin Times
Board of Trustees - Marin Community College District
Marin County Library
Novato Branch, Marin County Library
San Rafael Public Library
College of Marin Library
Indian Valley Echo

Novato Unified School District
San Rafael Elementary and High School Districts
County Counsel
Marin County Board of Realtors, Incorporated
Indian Valley Colleges Council
Marin Conservation League
Marin Conservation League, North Marin Unit
Chancellor's Office, California Community Colleges
Citizens Ad Hoc Advisory Committee, Marin Community College District
Neptune and Thomas Associates
Sasaki, Walker Associates Incorporated
North Marin County Water District
Dixie School District
Novato Sanitary District
Novato Merchants Associations
Lucas Valley Homeowners Association
Marinwood Homeowners Association
Pacific Telephone Company
Marin Historical Association
Novato Chamber of Commerce
Pacific Gas and Electric Company
Bel-Marin Keys Homeowners Association
Black Point Improvement Club
Domingo Canyon Homeowners Association
Forest Park Homeowners Association
Gnoss Estates Homeowners Association
Indian Valley Homeowners Association
Loma Verde Homeowners Association
Lynwood Park Improvement Association
Marin Country Club Estates Homeowners Association
Marin Highlands Homeowners Association
Monte Maria Homeowners Association
North Marin Federation of Homeowners
Poplar Terrace Neighborhood Association
San Marin Improvement Association
South Novato Homeowners Association
Wild Horse Valley Association
Novato High School Parent Faculty Club
San Marin High Parent Faculty Club
North Marin PTA Council
Loma Verde PTA
Lynwood PTA
Pacheco School PTA
San Jose Junior High PTA

League of Women Voters of Central Marin
Novato Republican Women
Novato Jaycees
Novato Junior Women's Club
American Association of University Women, Novato Branch
Novato Federated Women's Club
Novato Civic Foundation

Respectfully submitted,

John A. Grasham

Prepared by:

Dr. Ernest H. Berg
President, Indian Valley Colleges

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ENVIRONMENTAL IMPACT REPORT

Indian Valley Colleges Project

INTRODUCTION

The Board of Trustees of the Marin Community College District has frequently, through stated policy and action, expressed its concern for the preservation and protection of the environment. The Board is in complete accord with the policy statement of the Environmental Quality Sub-Committee of the City-County Planning Council of Marin which says:

> Man's place in the evolutionary process enables him to know: 1) His title to the land is temporary. 2) The land and its resources are finite. This knowledge tells him that his role - realistically and morally - must be one of the steward (a wise steward) if he and his environment are to maintain a stable, mutually productive existence - now, for the future, and for future generations.

Examples of the Board's concern for the environment are the extraordinary measures which have been taken to protect, preserve, and enhance the vegetation and the trees on the College of Marin site, the original College in the District.

With a full understanding of the need for the involvement of citizens of the County, the Board of Trustees established an Ad Hoc Citizen's Advisory Committee to review and comment upon the plans for the development of Indian Valley Colleges. The Ad Hoc Committee held several meetings and approved the plans for site development and for the architectural concept of the buildings.

At the request of the Ad Hoc Committee, an open hearing was held to which members of the Marin County Planning Commission, Marin County Board of Supervisors, Novato City Council, Novato Planning Commission, and interested public were invited to review the plans for development of Indian Valley Colleges.

I. PROJECT DESCRIPTION AND PURPOSE

A. Proposal: The Board of Trustees of the Marin Community College District proposes to build a second college on a three hundred thirty-three acre site adjacent to the City of Novato in Marin County. The location of the site is shown on Exhibit 1. The construction schedule indicates that the first increment of buildings would be ready for occupancy in September, 1974 with an opening enrollment of approximately 1,350 day students. It is projected that the day enrollment in the college will be approximately 2,500 in 1980 and will grow to 5,000 day students several years beyond the year 2,000. Although the Board is required by various governmental agencies to indicate how 10,000 day students could be accommodated on the site, it is the stated desire of the Board to limit the campus to a maximum enrollment of 5,000 day students. In view of the limitations of the site in terms of buildable area, the growing concern for preservation of the environment of Marin County, and the often expressed desire to limit the population of this area, it is unlikely that an enrollment of 10,000 day students will ever become a reality.

B. Purpose: The purpose of the project is to construct a college which will provide higher educational opportunities for students in the Marin Community College District, particularly in the northern part of the county. The proposed community college will offer a two-year program in academic and vocational studies. The college will be an open-door, tuition-free institution. It is anticipated that most of the students who enroll in the college will live within commuting distance. The college will also provide many cultural and intellectual activities for the community. Such activities might include drama, musical events, lectures, art exhibits, forums, and film series. The entire physical education facilities of the college will be available to the citizens of the community at times when the college is not in session. The physical education facilities will include playing fields, a swimming pool, hard courts, and tennis courts. Perhaps most important of all, the college campus will provide a very large open space which will be available to the community and which will be retained indefinitely as open space. Plans for the college campus include the development of self-guiding nature trails, hiking trails, and bicycle paths.

C. Need for the Project: Marin County which has a population of over 200,000 is served only by one four-year college, Dominican College, and one two-year community college, the College of Marin. There is need for additional college facilities in northern Marin County.

The College of Marin is situated in Kentfield at the intersection of Sir Francis Drake Boulevard and College Avenue. The general area surrounding the campus is presently congested and it is anticipated that congestion will continue to intensify over the next few years as a result of community growth. The further expansion of the College of Marin is undesirable for the following reasons:

1. Access to the Kentfield Campus is Restricted. With the recent extensive discussion on the projected widening of Sir Francis Drake Boulevard and construction modifications at its intersection with College Avenue, the issues relating to vehicular access to and around the Kentfield Campus are relatively vivid in everyone's mind. If consideration were given to any significant expansion of the Kentfield Campus beyond the design maximum of 5,000 day-graded students, it is reasonable to assume there would have to be expansion of College Avenue and Kent Avenue in addition to those contemplated on Sir Francis Drake Boulevard. Even then, there is serious question about whether or not the local streets can reasonably accommodate an expanded campus along with continued growth in local traffic.

2. The Kentfield Campus Has a Limited 77-Acre Site. If consideration were to be given to construction of additional permanent or temporary facilities on the Kentfield

campus, it would place a considerable strain on the limited land base available, particularly when consideration is given to the fact that there are still approximately 12 acres in the Marshland which are undevelopable at this time and that the 28 acres enclosed by Sir Francis Drake Boulevard and Laurel, Kent, and College Avenues are already highly developed.

3. Creation of Instructional Space Off Campus Implies Increased Expenditures From Operational Budget and Problems Relating to Safety. If District expansion were to be accomplished by renting facilities in the general community, such rental costs would have to be paid from the operational budget and cannot be financed from capital funds. There are no provisions for levying a permissive tax to finance rental facilities as is provided for capital improvements such as the Junior College Construction Act of 1967 (SB-691). Budget projections do not anticipate the expenditure of District operating monies for capital purposes. The majority of facilities within the community other than school buildings would not meet earthquake codes and, as a general rule, would not meet the qualifications of general safety for occupants as normally provided for in college instructional facilities.

4. There is a Direct Relationship Between the Maximum Design Enrollment and the Amount and Type of Space Programmed in Educational Specifications for New Structures and for Rehabilitation of Existing Structures. Based upon the maximum design enrollment of 5,000 day-graded students, the anticipated student enrollment in each department has been projected and spaces have been programmed to meet that specific need. Buildings at the College of Marin and the departments accommodated in each are shown on Exhibit 2.

5. Educational Consultants Employed by the District Recommended A Design Maximum of 5,000. In 1967 the Board of Trustees employed educational consultants, Management and Economics Research Incorporated (MERI) to conduct an $83,100 eight-month comprehensive study of the educational needs and related facility needs of the District. The consulting team recommended a 5,000 day-graded student campus at Kentfield and the development of a second college in the northern portion of the county.

6. One of the Specific Findings of the Regional Planning Study was ". . . Agreement That the Capacity of the College of Marin at Kentfield Should be 5,000 Day-graded Students." In May, 1970, a Regional Planning Study,

Marin and Sonoma Community College Districts was prepared for the Chancellor of the California Community Colleges by a four-member consulting team which addressed the issues of whether or not a second college was required in the Marin District and if so, when it should be built, how large it should be, and whom it should serve. The conclusion reached included the recommendation that the second college be developed immediately for opening in 1974, that it be master planned for more than the number of students anticipated by 1980 with provisions to expand to more than 5,000 students should future circumstances warrant. The first specific finding reported was agreement that the Kentfield Campus capacity should be 5,000 day-graded students.

Based upon the June, 1972 Department of Finance enrollment projections for the Marin Community College District, the day-graded enrollment in excess of the 5,000 that can be served in Kentfield are as follows:

Year	Enrollment
1974	1,348
1976	1,808
1978	2,247

thus, the enrollment projections of the State Department of Finance clearly indicate the need for additional facilities within the Marin Community College District. Since most of the growth will be experienced in the northern part of the District, it is also clearly indicated that facilities large enough to accommodate 1,348 students in the Fall of 1974, and 2,247 students in the Fall of 1978 must be constructed.

Following are the participation rates for student enrollments at the College of Marin since 1960. The rate is determined by dividing the total number of day-graded students by the total County of Marin population and expressed as a percent.

Year	Participation % Rate
1960	.55
1961	.82
1962	1.00
1963	1.05
1964	1.38
1965	1.63
1966	1.73
1967	1.96
1968	2.16
1969	2.26
1970	2.16
1971	2.34

The participation rate clearly indicates that the community colleges in Marin County are being used by an increasing proportion of the citizens. The rate also indicates that college enrollments are likely to continue to increase and that additional facilities will be required.

D. History of the Project:

1926		Marin Junior College District formed.
August	, 1926	Marin Junior College opened on 13-acre leased site.
		College experienced slow growth until end of World War II. At that time, the campus was expanded to 77 acres.
June	22, 1961	College of Marin Citizen's Advisory Committee presented a study of the College's expansion needs. Recommended that Board of Trustees proceed with purchase of second site.
January	16, 1962	Novato Unified School District became part of the Marin Junior College District.
January	30, 1964	Pacheco Ranch purchased for $860,000. Last parcel acquired January 15, 1970.
January	20, 1970	Committee on North College presented report to Board of Trustees. The report, which was the result of a two-year study recommended that the new college be organized as a cluster college.

February	10, 1970	Regional Planning Study completed. Study indicated need for second campus in the Marin Community College District and recommended that it be built on the Pacheco site.
June	25, 1970	The Board of Governor's of the California Community Colleges approved the development of a campus near Novato for the Marin Community College District and requested that the Coordinating Council for Higher Education consider the recommendation for approval.
July	1, 1970	The Board of Trustees officially named the new college Indian Valley Colleges.
September	10, 1970	The Coordinating Council for Higher Education formally approved a second college in the Marin Community College District for development of a site near Novato.
November	19, 1970	The Board of Trustees of the Marin Community College District stated its intention by resolution to complete the College of Marin to its master-planned size and to construct the first two phases of the new college.
May	15, 1971	The Board of Trustees of Marin Community College District appointed Dr. Ernest H. Berg, President of Indian Valley Colleges.
June	3, 1971	The Board of Trustees formally approved opening of the new college effective July 1, 1971.
June	17, 1971	The Board of Trustees officially recognized Indian Valley Colleges Council as the Committee designated to work with the President on development of Indian Valley Colleges.

June 22, 1971	The Board of Trustees approved educational specifications for buildings required for approximately 2,200 students.
September 13, 1971	Indian Valley Colleges received approval to offer training for veterans by California State Department of Education.
	First classes offered by Indian Valley Colleges in Novato High School and Hamilton Air Force Base with an enrollment of approximately 400 students in 17 classes.
January 24, 1972	Indian Valley Colleges granted Correspondent status by Western Association of Schools and Colleges.
April 5, 1972	Contract with college architect, Neptune and Thomas Associates, approved by the Board of Trustees.
	Sasaki Walker Associates named as landscape consultants to the college architect.

E. General Description of Area: The college site was purchased in six parcels the first of which was acquired in January, 1964. The location of the site is shown on the attached Exhibit 1. The last parcel was purchased on January 15, 1970.

The exceptionally beautiful site includes heavily wooded hillside on the south, two less heavily wooded hills on the north and a valley which runs in an east-west direction.

The two photographs included as Exhibit 3 show typical views of the site and Exhibit 4 indicates the topography of the property. The portion of the college site under a ten percent grade lies primarily in the valley and consists of approximately 80 acres.

1. Geology and Soils. On August 22, 1967, a report of initial studies of flood control, geology and soil engineering was presented to the Board of Trustees by Cooper, Clark and Associates. A map illustrating the geological formations on the site is presented on Exhibit 5. The report indicated that no special or unusual problems would be encountered during construction but that site development would require ground water control measures. No special seismic hazards were found.*

   The report states that:

   > Observed geological units consist of Upper Cretaceous marin sandstones, siltstones and shales which in general strike west to northwest and dip from 25 to 60 degrees to the north-east. Lithologically, they have been divided into two members: 1) generally massive, arkosic sandstones with minor shale interbeds located along the southern edge of the site, and 2) thin-bedded shales and siltstones with minor sandstone interbeds located in the rest of the site.

---

*In October, 1972 the District was advised of the possibility of a minor earthquake fault across the site. Additional research and indepth geological data is being gathered at the time this Environmental Impact Report was published. Plans for the campus will reflect the results of the additional information when it becomes available.

Weathering of the Upper Cretaceous rocks resulted in formation of soils which have partially eroded and deposited as alluvium in the valleys. Observed residual soil depths ranged from zero to about five feet in the hills. Depths of alluvium in the valleys ranged up to more than 38 feet as previously described. A few small, surficial landslides were observed at locations marked on the plot plan, but the hills appeared generally quite stable.

A chert outcrop is located as shown on the plot plan near boring one. This is considered to be surface float of no particular significance to site development.

2. Drainage. The site is drained by the North Branch of Arroyo San Jose Creek (now named Ignacio Creek) which parallels the valley. The flow of water is toward the east. One tributary flows into the main creek from the south. The creeks are seasonal with deeply eroded channels lined with a heavy growth of trees. A ditch on the north side of the main branch of the creek joins the creek on the adjacent property to the east. The ditch is heavily eroded and unattractive. Its banks are bare. A map of the site showing the location of the drainage ditch and the creek is attached as Exhibit 6. Typical views of the drainage ditch are shown in Exhibit 7. Treatment of site drainage is discussed later in this report.

3. Vegetation and Wildlife. A description of the vegetation and wildlife existing on the site is contained in Section IIB which is a report recently prepared by Wildlife Associates of Novato, California.

4. Archeological Sites. The following statement was prepared by Mr. John McBeath, Anthropology Instructor, College of Marin:

> There are two archeological sites located on the Indian Valley Colleges' campus land. This determination was made after a thorough survey of the entire campus area by anthropologists on the College of Marin staff. Neither of these sites had been recorded on the University of California Archeological Survey but are now in the process of being recorded at the Survey.
>
> One of these sites is an aboriginal living site of unknown antiquity and origin. This site is on the entrance road to the present Pacheco Ranch and has been approximately 50% destroyed when the road was built or by subsequent grading of the roadway and its margins. Another 25% of the site was destroyed in the construction of a riding ring that was constructed during the fairly recent past. It was thought that the original roadway was graded during the early part of the twentieth century and since has been rescraped several times until the original midden of the site was completely removed down to sterile soil.
>
> The second site on the campus is a quarry and working site where flint was quarried and this stone roughed and worked in the fashioning of tools which were subsequently removed from this site to habitation sites in the surrounding area.

The living site was one which is thought to be a seasonal campsite or one of the satellite villages which, with others, was part of a complex that was socially associated with a larger central village and ceremonial center. Because of the amount of historical destruction that has occurred, it is felt that this site can better function as a source of information in its excavation than if it is preserved as an example of a local aboriginal habitation site.

This site is straddling the present access to the campus and as such is scheduled to be demolished in the construction of the new entranceway to the campus. Because of its location and present condition, preparations have been made to systematically excavate the site so that information can be gained concerning the living and subsistence patterning of the aboriginal Indian population.

The quarry and work site is on the southwestern periphery of the campus and in no way will be interferred with during the construction of roads, facilities, or buildings on the campus and provisions are being made to preserve the site as a permanent study on the campus as it has both geological and archeological value.

F. Development of Site: The initial phase of site development is scheduled to begin in the spring of 1973 and will be completed by November, 1973. This portion of the site development will include:

1. General site grading
2. Storm drainage system

3. Construction of service roads
4. Sanitary sewer system
5. Gas distribution system
6. Water service and distribution system
7. Electrical service and distribution system
8. Telephone and signal raceways
9. Provisions for future road and campus lighting
10. Bridges for service and construction access
11. Erosion control of cut banks
12. Plantings at the entry from San Jose Boulevard
13. Erosion protection of the existing creeks
14. Parking areas

The second phase of site development is scheduled to begin in March, 1974 and will be completed in September, 1974. This portion of the site development will include:

1. Building area storm drainage system
2. Campus walkways and rest areas
3. Campus lighting
4. Campus signs, visual aids, benches, trash containers
5. Site landscaping, erosion control, and irrigation system.

Exhibits 8, 9, 10, and 11 illustrate development of campus parking area, campus walks and courts, lighting, landscaping and irrigation, and storm drainage.

To provide for ease of removal, should that be necessary or desirable, and to blend into the natural environment, all roads, parking areas, and walks will be constructed of asphalt. All utilities will be underground. The utility services for gas, electricity, water, telephone, and sewer are all available at Ignacio Boulevard on the eastern edge of the site. Gas, electrical, and telephone service have sufficient capacity to accommodate the initial development and can be readily expanded as required. Water service is adequate for the initial development and the water district has plans for expanded service that will parallel planned growth of the college. The sewer capacity is adequate for the projected growth of the college. Lamp standards will be constructed of wood. Wood railings will be used on bridges across creeks. Parking lots will be landscaped and isolated from the main entry road by landscaped berms.

For the purpose of preserving and protecting the natural environment and to prevent damage to the surface and the vegetation on the site, the Director of Planning, the District's inspection staff and the President of Indian Valley Colleges will maintain careful surveillance over the work of the architect and the contractors.

All of the site improvements will be constructed in strict accordance with the following guidelines set forth by the Board of Trustees in the North College Campus Master Plan:

Maximum Use of Natural Site Features

> The natural beauty of this 333-acre rolling site is cherished. The master plan for the use of the site must acknowledge this to the fullest extent and must maximize use of the natural beauty.
>
> Any grading that is necessary must be kept at an absolute minimum so as not to disturb to any great extent the plant materials and topography. Where grading or destruction of natural growth is absolutely necessary, the area should be replanted with plant materials like those native to the surrounding areas.
>
> Groves of trees and specimen trees should be identified and buildings and surface improvements planned around them. Certain specimens will be identified that are not to be disturbed under any condition. It is recognized that it is impossible to construct a campus for 5,000 students and perhaps more without disrupting certain natural features. It is critical, however, that this be kept at an absolute minimum and important that every advantage be taken of the existing natural beauty.
>
> Possible multi-level structures should be considered that might take advantage of the rolling terrain.

Natural Landscaping Concept

> When the necessary construction process has denuded land, its replacement landscaping should be designed in the most natural possible way and should, in fact, approach a "no planting at all" feeling. Wherever possible, plant materials that can sustain themselves without care after they are established should be utilized.
>
> As much of the creek area as possible should be retained in its natural state with only erosion protection being provided.

The project architect, Neptune and Thomas Associates of Pasadena, must operate within the guidelines presented in the Master Plan. Mr. Thomas has demonstrated a deep appreciation for the natural beauty of the site and a sincere desire to preserve and protect it.

One of the least attractive, but very necessary elements of any college campus is the parking area. Exhibit 8 shows the location of the parking area on the college campus. Two photographs included as Exhibit 12 show the general location of the parking area. Approximately 900 cars can be accommodated in the area shown. It is anticipated that the parking area will serve the needs of the students at least through 1980. It is hoped that changes in transportation patterns will make any extension of the parking area unnecessary.

However, if changes in the direction of public transit or other means do not take place, the parking area will be expanded into the valley directly north of the main traffic turn-around area in the central portion of the existing parking lot. Exhibit 12 shows the nature of the area in which the expansion will take place. It should be stressed, however, that the parking area on the campus will be expanded only when absolutely necessary and only after all other means of student access to the campus have been exhausted. If present transportation patterns persist, it would be possible to provide sufficient parking for an enrollment of 5,000 day students in the area north of the traffic turn-around. However, in the unlikely event that enrollment would exceed 5,000 day students, parking structures would have to be built to provide additional space.

It is noteworthy that the Board of Trustees and the staff spent many hours considering alternate methods of transporting students to the college campus and of providing parking for students. From the point of view of cost, convenience, use of the available level land on the site, and preservation of existing vegetation, the proposed parking area appears to be the best solution to the problem. However, the Board of Trustees and the staff will continue to study the parking and transportation needs of the students and will work cooperatively with the public transit authorities to encourage use of public transportation and to reduce the amount of automobile traffic to and from the campus. Additionally, the Board of Trustees and the staff will work with county and city planning agencies to construct bicycle paths which will make that form of transportation more attractive to students.

G. Construction of Buildings: The Board of Trustees directed the architect to develop an architectural concept for the buildings which would be appropriate to the beautiful, natural setting of the college campus. It is the desire of the Board that the buildings not impose themselves on the site but rather that they enhance and blend into the site. Exhibits 14 and 15 illustrate the type of buildings which will be constructed. The following features of the building construction are worthy of mention: 1) the individual cluster-colleges which will be separated as widely as possible will consist of several comparatively small buildings. 2) to minimize the necessity for grading, combinations of one and two-story buildings will be used, the one-story buildings being placed at higher levels than the two-story buildings. 3) extensive use will be made of natural materials. The main supporting columns of the buildings will be concrete. The main horizontal beams will be made of natural pressure treated, laminated wood. The exterior walls will be of natural wood or glass. The roof material will be either fire retardant wooden shakes or tile.

It should be pointed out that the buildings will be placed upon the site in a manner that will do the least possible damage to the surface and to the vegetation. In many cases buildings will be sited to take advantage of the presence of several large specimen trees. It should also be pointed out that by making use of the natural contours of the site and the heavy tree cover along the creeks, several buildings and complexes of buildings will be completely hidden from view, even from the center of the campus.

The first unit of construction is scheduled to begin in April, 1973 and will be completed by September, 1974. The construction includes approximately 83,000 square feet in the following structures:

Two cluster colleges
Administration Building
Bookstore (Interim Library)
Power Plants
Corporation Yard
Tennis Courts

The capacity of the college in September, 1974 will be approximately 1400 day students.

Construction will proceed on an incremental basis as justified by increases in enrollment. Present planning indicates that by 1978 the following additional buildings will be required:

One cluster college
Library
Lecture Hall and Theatre
Physical Education Facilities including swimming pool
Instructional Services

The present estimated contract cost for these developments is summarized on Exhibit 16.

The capacity of the college in 1978 will be approximately 2,200 day students. All of these students will be housed in Cluster Colleges A, B, and C. The location of the buildings which will be completed by 1978 is illustrated on Exhibit 17.

Enrollment projections indicate that capacity for 5,000 day students will be required some years beyond the year 2,000. The required capacity will be developed by building four additional cluster colleges as shown on Exhibit 18.

The Coordinating Council for Higher Education has stated that the college should be planned to accommodate 10,000 day students. However, the Board of Trustees of the Marin Community College District has indicated that it does not favor the development of a community college beyond an enrollment of 5,000 day students and that if additional capacity is required it should be developed on another campus within the District. The position of the Board of Trustees is supported by most junior college educators and by the recent report of the Carnegie Commission.

However, in the unlikely event that the Board of Trustees would be required to increase the size of the college to an enrollment of 10,000 students, it is probably accurate to state that such an enrollment could be accommodated on the 333 acre campus. Other community colleges of similar size have been operated on much smaller sites. The additional enrollment could be accommodated in several different ways:

1. Increase size of individual cluster colleges.
2. Construct additional cluster colleges.
3. Construct several multi-level classroom and laboratory buildings.
4. Construct multi-level, underground or off-campus parking facilities.

Since the population of Marin County is now being served by the College of Marin with a capacity of 5,000 students, capacity at Indian Valley Colleges for 10,000 students would not be required unless the population of the County trebled at some time in the future. It is extremely doubtful that growth of that magnitude would be supported or tolerated by the citizens of this county.

Indian Valley Colleges will accommodate some students from southern Sonoma County on an available space basis covered by a contractural agreement between the two community college districts involved.

H. Summary: The purpose of this project is to construct Indian Valley Colleges, a second college in the Marin Community College District. The need for the new college has been clearly established by the enrollment projections of the California State Department of Finance. Approval to proceed with the project and to receive matching funds under the Junior College Construction Act of 1967 has been received from the Coordinating Council for Higher Education, the Board of Governor's, California Community Colleges, the State Department of Finance and the State Legislature.

II. ENVIRONMENTAL IMPACT AND MITIGATION MEASURES

A. Impact on Surface:

1. Grading. While there will be grading required on the site because of the size of the project, the proportion of graded material will be minimal due to the design requirement that the natural characteristics of the site be preserved as much as possible. However, the efforts to avoid the removal of specimen trees will cause the routing of the perimeter service road to be done in such a manner that in some sections of the road the amount of cut and fill might be greater than would otherwise be the case.

   The disposition of the building elements into small units permits their placement with a minimum amount of grading. A combination of one and two-story buildings will be used to minimize any necessary grading by placing the one-story buildings at higher levels and two-story buildings at lower elevations. The pedestrian walks within the building portion of the site will follow the natural grade.

The parking areas will follow the existing natural grade as closely as possible. There will be two large earth berms created near the east entrance between the entrance road and the parking area to screen the parking. The earth for these berms will come from the grading operations on the site. The grading program is being designed to effect a balance between cut and fill so that no importation or exportation of material is anticipated.

Desirable top soil from the perimeter road and building areas will be stockpiled for use in landscaped areas.

The grading contractor will be required to observe and protect existing trees and plant growth that will be preserved. Specimen trees in vulnerable locations will be protected by fencing and barriers. Stockpiled materials will be placed in designated and controlled areas.

The District will maintain continuous inspection during the grading operations to assure compliance by the Contract with the requirements imposed. The contractor will be required to maintain a dust control program throughout the entire construction period.

2. Erosion Control. Existing stream beds on the site together with the problems inherent in the cut and fill operation necessary for construction of the perimeter service road make the problem of erosion control, both during construction and after, of extreme importance.

Rigid construction method requirements will be enforced upon the grading contractor to assure that sudden or unusual amounts of rainfall during construction will not result in excessive erosion of banks and fills that could result in the eroded materials being spread to other parts of the site and in the stream bed. Temporary drainage channels and earth barriers will be required during critical periods of construction.

In extreme cut and fill areas, wood and/or concrete retaining walls will be constructed to contain the soil, and the resulting drainage will be channeled into the stream beds in such a manner as to minimize erosion at the point of entry of the water.

The cut and filled banks created will be planted with shrubs and vines natural to the site as a part of the construction contract. The planted areas will be served by a landscape sprinkler system in order to insure the initial and continued survival of the plant materials. Necessary temporary retainers will be required to prevent any materials eroded during construction from being deposited in the stream beds.

3. Archeological Sites. As has already been pointed out, there are two archeological sites within the boundaries of the college site. The site located in the proposed parking area will have been explored and will, as development proceeds, be inaccessible for further work. The quarry site will remain in its present condition since no developmental work is planned for that area.

B. Impact on Vegetation and Wildlife. The Board of Trustees of the Marin Community College District employed the firm of Wildlife Associates of Novato, California, to study the impact of the construction and development of Indian Valley Colleges on the vegetation and wildlife presently existing on the college site. The report, which includes mitigation measures is included in its entirety as Section II B. of this Environmental Impact Report.

INDIAN VALLEY COLLEGES

TERRESTRIAL ECOLOGY IMPACT REPORT

June 1972

by

Philip H. Arend

WILDLIFE ASSOCIATES

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FOREWORD

At the request of Dr. Ernest Berg, President, Indian Valley Colleges, I have made a study of the probable impacts to the wildlife and the wildlife environment within the proposed campus site, located on a portion of Pacheco Ranch, southwest Novato, Marin County, California.

" The campus is to occupy approximately 330 acres of land which varies from gently sloping grass-covered valleys to steeply sloping brush- and tree-covered hills. Approximately 400 acres of surrounding land drains to the North Branch of Arroyo San José Creek, which flows from west to east through the center of the site. Intermittently flowing tributaries enter the stream on this site through two northerly valleys and one southerly valley. . . " *)

This study of the impact of the proposed campus development on wildlife and the wildlife environment is to determine:

1. Adverse impacts which cannot be avoided if the development proceeds.
2. Short-term or direct impacts; log-term or indirect impacts.

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*) "Initial Studies of Flood Control, Geology and Soil Engineering, Proposed North Campus, College of Marin", 1967.

3. Any irreversible environmental changes that may result.
4. Impacts upon rare or endangered species of plants and animals; any impacts that may involve locally important or spectacular natural features.
5. Possible mitigation measures, if any are needed.

The report also advances certain general suggestions for an integrated program of wildlife and environmental use and enhancement.

1.0 STUDY METHODS AND SCOPE

Limitations of time, budget, and immediate purpose determined the methods and scope of this study. Research has been restricted to three days of field observation, interviews with locally knowledgeable people, and a brief review of pertinent literature. No attempt has been made to quantify forage, browse, or population data for local wildlife species; only gross estimates concerning relative wildlife occurrences and population sizes were essayed.

With many more hours of daily and seasonal observations the local lists of birds, mammals, reptiles and amphibians, invertebrates, and of plants -- particularly the spring blossoms -- could be expanded. But even in the three field days allotted to this study, the components of the plant and wildlife communities found here can be outlined. On this particular site and for this particular project, the environmental factors controlling the status and function of the major associations and systems stand starkly clear, for reasons which will be discussed in some detail later in the report. Despite the brief and somewhat cursory field study, the conclusions may be regarded as firm.

2.0 GENERAL ENVIRONMENTAL HISTORY AND EVALUATIONS

The proposed campus site lies in the eastern sector of the historic Pacheco Ranch, an integral part of early Marin and Novato history. This particular sector of the Ranch has always been pasture land; there is no physical evidence of agricultural development, timber-cutting, or other major land use. A small quarry exists on Indian Valley Road, just beyond the present west boundary fence. For the past twenty years the site property has been horse pasturage. For the past three years, since its purchase by the Marin Community College District the property, under lease to Mr. David Brumett, has been stocked with riding horses many of which are being boarded for local residents and members of riding clubs. The ranch is overstocking beyond the normal carrying capacity of the pasturage and supplemental feeding is essential. Horses graze the entire valley site and severe cropping and browsing is clearly evident.

Mr. Brumett told me that, normally, at least two months of grazing for his stock can be anticipated after the spring rains.

This year of 1972 -- a drought year --only a few weeks of grazing were possible. No accurate count was ascertained for the grazing livestock (to ask this of a rancher is like asking to inspect his bankbook), but between forty to sixy head were roughly estimated. Whatever the exact number, there are too many for the environmental well-being of the ranch. The grasses here are primarily annuals of poor forage quality; these are close cropped. Filaree, a prime quality forage plant and a ubiquitous European immigrant on most of California's grazing lands (even in Southern California's dry alkali pastures), is here reduced to an occasional sprig with often only a single blossom. The grassed and open hillsides are ridged with criss-crossed stock trails. Erosion rivulets, horizontal washing, and topsoil loss are evident. Few chaparral brush species occur within the ranch confines; even the hardy and ubiquitous coyote brush is far from abundant. The woodlands of the hillsides and crowns, and of the creeks and tributaries, lack significant understory; often even grass is missing and only leaf mold is to be found.

The ranch creek, the North Branch of Arroyo San José Creek, also gives physical evidence of the severe overgrazing on the ranch. Overgrazing probably began within the past twenty years with the upsurge of local suburbanite interest in horseback riding and stabling. The alluvial bed of the creek is deeply eroded and down-trenched, in some areas vertical banks are slashed fifteen feet deep. Such vertical banks are, of course, evidence of recent rejuvenation of stream velocities and volumes. Rejuvenation of this nature, when noted with the increasingly intermittent character of the stream flows, indicates increasingly rapid watershed runoff and decreasing soil-water percolation on these grasslands, induced by soil compaction, loss of fossorial wildlife and loss of vegetational mats.

In addition to the overgrazing and erosion of the grasslands and the downcutting of the creek bed, several other factors contribute to the present ecological status of this ranch and its potential. Local climate and geomorphology play a dominant role, particularly in the woodland patterns.

This valley lies below the crest of a much higher ridge of hills to the southwest. Inrolling coastal fogs are generally held at this ridge crest. Only occasionally do they spill over to carry moisture and fog-drip to this small, water-short valley. But such fogs do occur often enough so that the ranch hillsides and hill tops can support a mature, climaxed growth of oak, bay, buckeye, and madrone; and often enough so that forest fire has not yet swept these hills in historic times, although I judge this fire hazard to be ever increasing. The fog, perched on the looming southwest ridge, contributes a second major factor -- cold air and a prevailing westerly breeze. Usually the breeze is a chill, dehydrating wind, discouraging to flying insects and avoided by birds and mammals. Blossoming vegetation subject to its touch tends to be late or meager. Axiomatically, among the temperate climate zones, cold dry areas are, biologically, the least productive. This ranch lies at a relatively low elevation in an otherwise equable climate. If provided with niches sheltered from the wind, supplementally watered, and supplied with nutrients, a varied biota can flourish here.

Another factor that has shaped the character of this environment is time. The densely canopied brush-free woodland that girdles the property and crowns the central knolls is a vegetational climax. My study has been too brief to reveal the exact pattern of the plant successions. Possibly at some point in pre-history, perhaps following a great drought and/or fire, chaparral became established. Leaf litter was deposited from the shrubs and deepened; tree species invaded and grew tall. Eventually the trees shaded out the lower-growing shrubs, great deep root systems usurped the soil moisture and soil nutrients. The shrubs succumbed and gradually the canopy closed tighter, until now a relatively restricted woodland flora (four species of oaks, the California Bay or laurel, buckeye and madrone) cloaks the hillsides. Only a few persistent brush species with effective climbing habits and tolerance for shade are still found. Poison oak is most conspicuous. In some deeply shaded areas, poison oak has emulatedthe tropical strangler fig; cable-like vines have climbed oak and bay trees and the familiar bright green foliage of this beautiful but irritant vine has usurped two-thirds of the supporting tree's foliage space in the sun.

Should environmental conditions of drainage, light, air quality, water supply, etc., remain unchanged and the compact canopy remain unbroken, the present woodland tree association, a climax stage, could continue as it is indefinitely. However, the fire hazard will mount as the fuel content of the woodland increases. Furthermore, as human use of the surrounding terrain increases, the chances of accidental or vandalistic ignition also increase, until the question is not if but when will the woodland catch fire. Swept by fire, the woodland will return as chaparral, not as the oak-bay-buckeye-madrone glades now known. Many years would be needed to reestablish this climax forest. Fire protection for these woodlands is imperative. Protection can probably be achieved without undue environmental unbalance or excessive cost. This problem is discussed in section 7.0.

A final factor in assaying the site environment is the local water supply available to wildlife. Ironically, as the velocity and volume of the creek flows increase, the stream becomes ever more intermittent. During a visit in late May the stream was still trickling. Two weeks later, in early June, flows had ceased and only in the deep creek bed could some small, dark and nearly lifeless pools be found. Only one spring is reported in the vicinity, off the property to the west. No live spring or permanent seeps could be found or are reported from the hillsides, although a few dank fern-growing sites were located along certain ravines. This lack of dispersed free water is critical to wildlife. Only the animals bold or subtle enough to use the horse troughs or well site drips can now find water throughout the year on this property.

This, then, is the present environmental status of the area: an overgrazed and sheet-eroding grassland; an intermittently flowing erosive creek with a lush, beautiful and mature riparian tree association; and a climaxed, barely reproductive oak woodland which, however, possesses natural beauty and ecological interest. These three major plant associations together support a moderately abundant but oddly assorted avian population, a restricted mamml population, relatively few reptiles and amphibians, and an invertebrate population that appears oddly assorted and not particularly abundant. The local environment is severely water-short; a critical factor, particularly to breeding or juvenile animals in middle or late summer.

3.0 THE VEGETATIONAL COMMUNITY

Three major plant associations are identified: grassland, woodland and riparian. There appears to be no clearly defined chaparral or brushland association within the property, although one small patch of brush, less than an acre in size, is found in the northwest corner of the property, at the upper edge of the grassland on a south-facing slope. This small brush field is dominated by poison oak, intergrown by grasses and forbs. Another emerging plant association has been created by the clearing of the powerline corridor that transects the southerly perimeter of the property. Grasses and weeds of several species are found; brush is beginning to invade; predominantly coyote brush, although a few sparse shrubs of deer-brush and Christmas-berry or toyon are found -- and are heavily hedged by deer.

3.1 Grassland Association

Dominant grasses are cheats, bromes, farmer's foxtail, wild oats (few), dogtail. One high-quality forage grass, needlegrass, was found, represented by only three or four plants and located high on the hillside above the most severely grazed area. One small stand of quaking grass was found.

Of the forbs, coast eryngo -- a small, very spiny Mediterranean invader -- dominates much of the grassland. Filaree is to be found scattered throughout this association but, since it is an "ice-cream plant"(a favored stock forage), the plant is meager. Other common forbs found sparsely are Italian thistle, tarweeds, and other hardy common weeds of the roadside. In the still slightly damp hillside swales, beds of a fragrant mint, pennyroyal, are seen. Apparently this mint is not grazed by horses.

Little brush invades the fringes of the grassland. What often looked like chaparral brush from a distance, proved on closer examination to be oak, bay, or buckeye that had been so closely hedged as to become stunted brush clumps.

3.2 Woodland Association

The forest cover that cloaks the crowns of the central knolls and the perimeter hillsides is remarkable, and perhaps even unique, in that here, on these 330 acres, are found four different native oaks and three other native trees in climaxed, mature stands with no transplanted nor invading exotic trees -- except for a couple of conifers at the ranch headquarters. No eucalyptus has been introduced, nor do redwoods, pines, cypresses or cottonwoods occur, nor do all the host of other trees that western man usually has in tow when he moves in on the land.

There are two species of liveoaks, coast liveoak and interior liveoak, and two deciduous oaks, valley oak and black oak. On the northeast ridge of hills overlooking San José Junior High School, a stand of apparently hybrid oaks is found. These may be valley/ interior liveoak crosses, or possibly even a three-way cross (!). This puzzle is a research task for a plant geneticist -- one of the many fascinating natural study areas for students that this campus offers.

Most numerous appears to be the interior liveoak, although I suspect that a critical quantitative population analysis would reveal a vertical zonation gradient of the oak species, as well as an east-west gradient and an exposure zonation. There are certain obvious zonations noticeable from a distance. Oaks dominate the knoll crowns, bays appear more at lower elevations. Buckeyes and madrones are more common on the northwest-facing southwest sector, and the large solitary giants of the valley floor are generally the valley oak.

The shade of the dense canopy has eradicated most of the expected brush or vine species from the understory. Only the ubiquitous poison oak is common here and is more often found as a climbing, thick-vined tree"parasite" than as a free-standing shrub. I found the forest floor to be relatively clear of limb or twig litter. A few wood-rat nests were located -- it may be that these busy rodents keep the floor cleared by their nest-building habits. In so doing they may also account, in part, for the freedom from wildfire that has permitted this climax woodland to persist.

The list of plants found in the understory is short. The plants themselves were generally small in numbers and meager in size. Only one blackberry patch was found. Toyon or Christmas-berry was also found but once in this association. Birdsfoot trefoil or deerweed, a twining legume, is regularly encountered. This plant was most abundant in the patch of poison oak brushland noted in section 3.0. Bush monkeyflower and a gilia were two of the commoner flowering plants found still in bloom around the association's fringes.

3.3 Riparian Association

This plant community is, in many ways, an intergrade of the grasslands and woodlands. Few new plant species are encountered except for ferns, horsetails, and a few moistureloving, shade tolerant forbs. But the tree species ratio differs greatly from the woodland association. California laurel(also called bay tree, bay laurel, pepperwood -- in Mendocino County, and myrtle in Oregon) dominates the stream sides, and some of these matured trees are magnificent giants. This is the tree prized by cabinet makers, and bay leaves are a delectable seasoning. Interspersed with the bays are liveoaks, deciduous oaks, buckeyes, and a scattering of madrone. A couple of madrones are near record size, particularly the one growing north of the main creek and just west of the "Deer Camp" horse corral.

Understory in the densest shade of this association along the main creek (North Branch of Arroyo San José Creek) is very meager. Along the north tributary and the two south tributaries the trees are fewer and the canopy is more broken. A comparatively varied understory of grasses, shrubs, vines and forbs grows here. These now-dry overgrown creek bottoms and banks probably are the most productive general wildlife cover on the site, although wildlife production is limited, of course, by the persistent water shortage.

Plants noted in the riparian understory are: deerfern, ladyfern, maidenhair fern, sword fern. These ferns are generally found in deep shade and moist habitat. In drier and more open sites, bracken fern is encountered. Honeysuckle, hedge nettle, snowberry are also found in the dense shade where grazing has been light.

3.4 Species Summary

No attempt was made to compile a complete floral inventory. Many of the annual spring flowers had long since disappeared; other plants -- palatable forage types -- had undoubtedly been grazed off. A list of the plants found, with their common and scientific names noted, is appended to this report.

In certain respects the most significant plants are those conspicuous by their absence. Many common chaparral shrubs are lacking. Very common plants of dry hillsides are not found, among these a native Indian staple, Soap plant (*Chlorogalum pomeridianum*), and the sentimentally named Farewell-to-spring (*Clarkia amoena*). Dog fennel (*Foeniculum vulgare*), cockleburs, larkspur, lupine, and many other plants commonly found in the Novato hills and fields are missing from the property, although several are found just beyond the stock fence. Even wild mustard, wild radish, thistles, wild oats, bindweed, and the other common weeds are lacking.

Archaeological investigation has located four sites along the north bank of the creek where Indian artifacts and dwelling sites are found in sufficient quantities to indicate that a small community of aboriginals had been established here for many, many years. Today, the permanent water and the varied plant life, the forage sites from which the Indians secured a living, do not exist within the ranch -- further evidence of the floral changes and the environmental depletion of this land within the past two hundred years.

4.0 THE WILDLIFE POPULATIONS

A familiar concept in animal ecology is the food pyramid and the ecological web. Such concepts are based on "who eats whom". Ultimately, the food pyramid rests upon the energy derived from the sun, the physical and chemical properties of soil and water, and the vegetational base -- plants photosynthesizing solar energy to convert into nutrients for themselves and the organisms who forage on them.

Due to the dry, cool climate, chilly winds, and the shortage of free water at critical seasons, the climaxed plant associations on this land are biologically only lightly productive. This, combined with the overgrazing which permits much of the renewable food energy of the land to be carried off by livestock, has resulted in an oddly imbalanced and depleted wildlife in every category -- bird, mammal, reptile, amphibian, and invertebrate. The birds are most numerous, but even this highly visible and audible population displays some peculiar features.

4.1 Bird Life

Forty-three different species of birds were noted *) during one day of observation by skilled observers, from 5:00 AM until dusk, about 8:00 PM, on June 4, 1972 -- a time of year somewhat past the peak of spring mating and nesting activity.

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*) See appendix for listing of common and scientific names.

Most migrant species will have vacated and populations normally would have been low. However, the total populations and the species variety are more restricted than we anticipated in an area of three major plant associations.

With several exceptions, most birds noted on the ranch can be grouped in two major categories. In the first category are birds foraging or associating with the grasslands horse pasturage, i.e. seeking food in spilled grain and hay or foraging in horse dung, fly catching, beetling, seeking hay or horsehair for nesting material, watering (or mudding, like barn swallows) at horse ponds and troughs. These birds include the numerous crows, Brewer's blackbird, red-winged blackbird, brown-headed cowbird, purple finch, house finch, brown towhee, violet-green swallow, barn swallow, tree swallow, cliff swallow, mourning dove, western meadowlark, starling, chipping sparrow, song sparrow, and the semi-domestic stone dove or "city pigeon" and the "English" or house sparrow.

The birds in the second category are those associated with the forest canopy and its leaves and insects, or foragers of bark and twig and leaf: three fly-catchers, both Steller's and the scrub jays, titmice, bush tits, wren tit, chickadee, Hutton's and warbling vireos, and orange-crowned warbler. Most common in the riparian association were the warbling vireos and the chestnut-backed chickadees. The plain titmouse was not as common as expected. One black-headed grosbeak was seen.

Spotted towhees are fairly common in this habitat. Only one Bullock's oriole was seen. Bewick's wren was heard several times from the forested hillsides.

Two unusual species were recorded: the rock-wren noted at the old quarry; and the blue-gray gnatcatcher, a shy and scarce species, was seen in the riparian association.

Several turkey vultures drifted overhead and one raven flapped by, croaking hoarsely in the early daylight. Two sparse coveys of valley quail were seen in the early morning. A few calls were heard from hillsides throughout the day, but the quail population is apparently small. Western bluebirds, goldfinches and Oregon juncos were observed in small flocks; they were probably just traveling by. A couple of Allen's hummingbirds were observed foraging near a buckeye.

The absence of several species is a peculiar phenomenon here. No woodpeckers nor flickers were seen. Why woodpeckers, at least acorn woodpeckers, were not found in this mature oak forest is quite puzzling. Elsewhere in Novato, woodpeckers and flickers are very common around the old valley oaks.

Less puzzling is the absence of all hawks and owls. None were seen -- nor were any pellets or casts found. The area is obviously scantily supplied with small rodents or rabbits. Thus, there is no food base, no prey species , for the larger predacious birds. However, the absence of insect-feeding sparrowhawks is less easy to explain.

The absence of chaparral avifauna such as buntings, certain wrens, thrashers and thrushes, was anticipated. But I have no explanation for the absence of killdeers or mockingbirds from this valley.

4.2 Coastal Blacktail Deer

Blacktail deer frequent this ranch; the actual size of the population, particularly in this drought year, is not known. In past years populations appear to have been quite high, if the browse line on the trees and the extreme hedging of saplings and brush is valid indication of deer use and not of ranch stock use. Mr. David Brumett, the rancher-tenant, stated, "...about two hundred deer around the ranch; I have seen maybe a hundred grazing at once in the pastures". In high quality deer habitat in northern California, a hundred deer to a section (640 acres) is considered excellent.

Since this ranch (330 acres) and its watershed (400 acres) total 730 acres, a maximum population of about 120 deer, in a good year, might be anticipated. Coastal deer populations have drastically declined this year. I doubt if more than forty to fifty deer invest the ranch and watershed at present. Physical evidence bears out this assumption. Deer tracks on low-lying trails are few. No droppings were found on the flats; pellet groups found on hillside trails were few. One doe was seen one afternoon. Early morning and late evening observations have not disclosed the purported grazing herd. Most conclusive evidence of a decline in deer numbers is to be obtained from the investigation of browse lines and hedged brush. On most of the severely hedged shrubs and saplings, the new spring growth has not been touched. Only in one or two instances did we find a nipped off leader or browsed twig.

I cannot hazard a guess as to the reason for this recent drastic decline. Persistent drought, general coastal population decline and consequent animal dispersal, over-browsed range, epidemic disease -- all, none, or even a combination of these factors may be the cause.

No legal hunting has been permitted on the ranch since the Community College purchase, so the decline cannot be attributed to legal over-harvest. Poaching or vandalism may be a factor. Mr. Brumett stated that "recently" he had found four illegally shot doe carcasses stacked in a remote sector of the ranch. No attenpt had been made to use the venison; the slaughter, apparently, was for target shooting only.

4.3 Rabbits, Rodents, other Small Mammals

Rabbits. Four jackrabbits were observed moving about on an east-facing grassy hillside that was just warming to the dawning sunlight. Aside from these, no rabbits were put up during our reconnaissance and scant rabbit sign was found. Grass is so short that little cover for trails or forms (nests) is to be had. Few pellets or tracks were encountered. No cottontails or brush-rabbits are reported on this ranch.

Wood rats. We saw two wood rat nests, and undoubtedly several more brush pile nests of these curiously charming rodents could be found with more diligent search -- the mature woodlands provide almost ideal habitat for these creatures. Campus development should have little or no direct or indirect impact on these animals, since they are found only in the canopied woodlands of the knolls and hills, where no disturbance will occur other than possible trail clearing.

Grey squirrels are reportedly abundant in the mature woodlands. However, we saw none and found no evidence of their occurrence. This is not so surprising, since the grey squirrel exhibits extreme cyclical population level changes; often varying widely from one local site of scarcity to an adjacent one of abundance.

Ground squirrels. Beechey ground squirrels, the ubiquitous "grey diggers", are surprisingly scarce on this ranch. Suspecting possibly that rodent controls (poisoning or trapping) had been initiated, I queried Mr. Brumett. He informed me that no controls had ever been used or needed during his tenancy; the ground squirrel population was always low on the ranch. He pointed out the two local areas where a few might occur. These were sites near stock paddocks or lumber piles, along the creek road. Only one ground squirrel was seen twice, posed on the same stump alongside the road. During the cattle-grazing period which ended about twenty years ago, ground squirrels may have been more numerous. In one grassy hillside location, a caved-in and rain-eroded tunnel typical of badger denning was found. Badgers prey primarily on ground squirrels, and a high ground squirrel population is usually soon accompanied by a foraging badger. Currently, no fresh badger burrows are found on the ranch.

Rats, mice, voles. No direct observations. Populations are probably small at present.

Gophers and moles. A few gopher burrows are found in the riparian association edge and also, in minor numbers, in the damp seeps or shaded, more moist perimeters of the woodlands. I judge the population to be small; particularly since predator birds who forage on gophers are so scarce or missing over this property. No clearly identifiable mole burrows were found.

Shrews. These secretive insectivores can probably be found in the leaf litter of the woodland. No evidence was seen, however.

4.4 Predators

Raccoons, opossums, and the mustelids (skunk, weasel, mink) are either few or entirely missing from the ranch. This is probably attributable to the lack of forage wildlife such as rats, mice, edaphic invertebrates, amphibia, or gound-nesting birds, as well as to the lack of brush or high ground cover. Since these mammalian predators are not uncommon in nearby suburban Novato, their absence on this isolated ranch indicates the currently low wildlife productivity of the site.

Larger predators (coyote, bobcat, mountain lion): No present evidence from the ranch.

Feral animals. Stray dogs are an occasional problem on the ranch. The tenant tries to control these, to avoid damage to valuable riding stock. Feral house-cats may also occur.

4.5 Amphibians and Reptiles

The soft dust of the ranch roads and the hard-packed surface of the equestrian trails create an ideal medium for registering wildlife tracks. The most numerous wildlife sign are the bird tracks, particularly crow tracks and those of smaller birds foraging on horse dung. Far less common were deer, rabbit, or rodent tracks. Significantly, no snake or lizard trails were noted and only one reptile, a fence lizard on a barkless fallen log, was seen No frogs or toads were seen or heard. The shadowed pools still standing in the creek bed contained no pollywogs or egg masses of either salamanders or frogs. In fact, the pools were nearly sterile, containing only a few water-striders, beetle and mosquito larvae. There was no aquatic plant growth, and the gravel and twig litter of the stream bed is covered with a slimy black coating indicative, I suspect, of organic pollution upstream.

4.6 Invertebrates

Time strictures for this study precluded all but an extremely cursory examination of what is, undoubtedly, the most obscure but most basic element of any ecological investigation. Definitive field studies of insects, worms, spiders, crustaceans, mollusks, and the host of other life forms grouped under the term "invertebrates" -- the edaphon or soils animals, aquatic small life, the life of the grass stems, flower heads, and of tree leaves and bark, all the rest of the "creepy-crawlies" from which too many people often shrink, shriek, and flee -- are both taxing and expensive. Time consuming services from highly skilled specialists are required to gain even basic inventories; to track through the complex web of interacting tensions and behaviors that constitutes even the simpler local ecosystems can require years of dedicated study by professionals. The best that the present study, scoped to the broad requirements of an environmental impact statement, can hope to accomplish is to sketch the faint outlines of what the local invertebrate environment may encompass.

Overgrazed horse pastures spotted with horse dung encourage flies of many species. The open, sparsely grassed pastures are favorable habitat for burrowing ants, despite the heavy texture of the soil. In the deep shade of the riparian and woodland canopy, we often encountered areas of hundreds of square feet carpeted with spider webs. Neither the spiders nor the principal prey -- several different kinds of collembolans or "spring-tails" -- were identified. Bark creatures and the animals found under fallen logs or in rotting wood were not abundant, probably because of the current drought.

The height of the spring flower bloom on this property was several weeks past. Even between my first informal visit to the ranch in mid-May and my first field study on June 4, 1972, many flowering annuals had disappeared. Concomitant with the occurrence of the flowers are the nectar-foragers. On June 4, only a few honey-bees and bumblebees were still to be found, mostly foraging in the pennyroyal and grasses. Butterflies were few: cabbage butterflies, sulphurs, swallowtails, a couple of monarchs and(probably the most numerous) various skippers in the grasses. No attempt was made to pursue and capture, for identification, any of these, but they all appeared to be species commonly found locally in Marin County.

The paucity of life in the creek puddles has been mentioned. The only sizable or interesting invertebrate noted in the riparian association was a four-inch long yellow-green "banana slug" found at the slightly damp, mossy base of a California bay. No snails nor snail shells were found.

5.0 IMPACTS OF PROPOSED DEVELOPMENT

All environments are in a state of dynamic tension -- living forces balanced against other living forces. Any change, any action within such a balanced system engenders reaction. Inevitably, some organisms benefit while others are disadvantaged. In determining the effects, the impacts, of any action within an ecosystem, there can exist little scientific justification for such sweeping moralisms as "good effects" or "bad effects", or even "adverse impacts" or "beneficial impacts" (although these are useful terms difficult to avoid). Always, some individuals or groups of organisms profit and thrive, others lose and die. Identification of impacts must be based, at least in part, on preconceived desirable human goals in the environment. The following criteria are most generally accepted as environmentally desirable:

A. A stable, secure environment.
B. A productive and varied biota.
C. An ecosystem that is flexible and resilient to short-range vagaries or chance catastrophe.
D. An aesthetically satisfying milieu in which human needs can be requited.

It is within this framework, and using these criteria, that the following assessment of the impacts on the terrestrial ecology of Indian Valley Colleges is based.

5.1 Direct Impacts

The major direct impact will be the removal or obliteration of about 30 to 40% of the lower, most level, grasslands by buildings, parking lots, service and entrance roads, walkways and trails. The overgrazed, non-productive character of this grassland has been discussed. The grasses and weeds that will be directly eradicated have little economic or ecological value. No wildlife will be directly disadvantaged by this soil and vegetation loss, save for the insects (flies, bees, scavenger and predacious beetles) associated with the horse pastures, the very few fossorial mammals directly in the path of the graders and, to a very minor degree, a few of the ground-foraging birds who will be deprived of a food niche *) provided by the spilled grain, horse dung, and hay seed. Some nesting birds will be forced to seek a material other than horse hair for nesting fiber. By and large, this direct impact will not deprive the total environment of any productivity or variety. The grassland association is in itself so deprived and poverty-stricken by many years of over-use and mis-use that any environmental change which will introduce more water, more varied habitat and niches, and eliminate overgrazing on the rest of the grassland cannot help but upgrade both the total numbers of animals on the site and encourage a wider variety of species.

In certain building sites, particularly those south of the creek, some areas now occupied by riparian trees and grass must be cleared. The impact of this clearing , in this area, will be slightly heavier than the impact on the north side of the creek, but the effect will be minor. Although the removal of some riparian trees will deprive some birds of nesting habitat or of

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*) A somewhat oversimplified definition:

Habitat: where an organism lives, its "home".
Niche: where an organism works, its "office".

forage niches, the additional sunlight penetrating to the riparian understory will produce lush and more varied vegetation and will support larger and more varied bird populations.

7.2 Indirect Impacts

The removal of some trees along the creek will have several effects, of which penetration of sunlight to the understory is only one. Most of these effects will tend to upgrade the over-all environment. An increased volume and duration of creek flow will result from removal of some of these phreatophytes. Just one large oak or bay along the creek may transpire more than forty tons of water each summer from the ground-water supply. In total, this drawdown is enough to drop the ground-water table below the reach of seedling or sapling trees and reproduction will not occur. Thus the removal of selected mature trees will, in effect, insure the survival of the forest as a whole, as well as restore some of the creek flow.

A clearly stated policy in the North Marin College Master Plan is that only absolutely necessary tree removal will be permitted and that every effort will be made to preserve and protect "specimen" trees. Since part of the reason for the low productivity of the woodland and riparian associations on the ranch is the closed-in canopy of the mature climaxed woodland, judicious removal of some of this canopy, in carefully selected sites, will provide an environmental enhancement for most wildlife.

Covering several acres of this ranch with impervious watersheds such as roofs, concrete walks, asphalted roads and parking lots, will block percolation of ground-water. This could adversely affect the survival of the riparian habitat or of isolated "specimen" trees on the campus, unless some provision is made to re-charge this ground water in the remaining grassland and to irrigate the trees.

The woodland associations of the hillsides or knolls are not scheduled for any direct manipulation,except for a service road on the campus perimeter. A boundary patrol road may be required. There will be only slight negative impact, other than aesthetic, from these roads. Positive impacts of the roads are: increased fire protection, additional plant growth from canopy penetration, and some minor wildlife edge. The campus perimeter road will have water lines and mains installed for fire protection and landscaping irrigation. As a stated Master Plan policy, landscaping will utilize native species as far as possible, rather than horticultural varieties.

Based on the existing botanical composition and wildlife population levels, it can be seen that the proposed development of the campus will result in no significant degrading environmental impacts, if project performance adheres to project plans . (Too often, in the final construction stage, environmental decisions are made from the saddle of a bulldozer rather than from the planner's drawing board.) No rare or endangered species of either plants or wildlife are threatened. The only irreversible changes will affect an overgrazed horse pasture, which will be lanscaped into a harmonious building complex that will fulfill a more productive role as a rural college campus. None of the local birds or mammals, or other native wildlife, are threatened with significant loss and many wildlife species will be advantaged. The ranch biomass will probably remain the same or a bit higher. Only the horses, their insect symbiotes and parasites, and the equestrians will be seriously inconvenienced or superseded.

6.0 MITIGATION

Since no significant losses of either wildlife or native vegetation are anticipated, no formal mitigation action is needed.

7.0 ENHANCEMENT AND LONG-RANGE DEVELOPMENT POTENTIAL

Although no mitigation is needed and it can be anticipated that, over-all, wildlife species will increase in numbers and variety on this site, we must not overlook the fact that inevitable change is coming to this dynamic environment. Ecological change cannot be forestalled; it can only be directed. To direct this change toward desirable environmental goals a constant, flexible and imaginative system of monitoring and controlling the environment is essential. Presentation of a definitive program falls beyond the scope of this report, but the following suggestions are offered in the hope that they may provide a springboard for the development of such a program. If initiated from the outset of landscape planning and campus construction, the environmental enhancement opportunities are excellent and the potentials for integration of enhancement with the educational, training, and student recreational functions of this college are not only high but may well be unique.

7.1 Water for Wildlife and Vegetation

A. The North Branch Creek

Removal of some of the riparian edge phreatophytes, introduction of urban domestic water for fountains, lawns and campus flower beds, the perimeter water line, increased runoff from surfaces -- all will make more water available in lower levels of the campus. This ground-water and runoff will collect and eventually discharge through the central creek channel. The erosion in this channel has been noted. Several of the undercut trees will have to be removed before they topple over and block the channel.

Downcutting velocities could be restricted by building a series of rubble check-dams and possibly by restoring a part of the eroded stream bed. Of course, flood control engineering would have to be consulted to make sure that stream impedance would not lead to destructive flooding over the adjacent campus. But, if feasible, these impondments would either be permanently watered, or could be partly supplied by domestic water during drought periods. Such pools would provide permanent aquatic habitat for many plants and animals now missing from the campus site.

At the lower, eastern, reach of the creek a small, shallow lagoon can be built between the parking lot and the south bank of the creek. This lagoon, flanked with a grassy sward on the parking lot side, will make a most attractive entrance display. Waterfowl and other aquatic wildlife and pond or marsh vegetation can be encouraged, to provide a valuable and handy teaching accessory to the college. Ecological balance must be emphasized in such developments. The over-stocked, stripped, and smelly aspect of a city park "duck pond", jammed with Pekin-mallards and city pigeons, and ripe for disease outbreaks, must be avoided.

As water impoundments develop and some broken sunlight penetrates the riparian edge canopy, native shade-tolerant plants will either appear or can be encouraged. Native fern already grow here. Scions of these can be transplanted. Shrubs such as snowberry or honeysuckle may be encouraged. For the sake of student health and safety, poison oak will have to be controlled along the creek. Small walkways and arched bridges will be needed to control otherwise random foot traffic that would soon pound out the fragile riparian understory. Increased understory and increased aquatic productivity will, of course, lead to increased bird and other wildlife use here.

B. The Tributaries

Some of the tributaries will undoubtedly increase in flow, but they probably will not become permanent streams unless dormant springs at their heads are located and developed. These tributaries could be supplemented with domestic water, but the cost may be prohibitive. However, judicious phreatophyte control, development of wildlife cover and food plants along these watercourses, the development by inconspicuous irrigation of ferny glades, wildlife habitat development by brush-piles, guzzlers and feeding, resting, or nesting habitat -- all these can be programmed inexpensively through campus development, maintenance, and student project activity. Such activity must have direction and continuous monitoring, to avoid severe environmental imbalance. But the costs will be minor and the rewards ample.

C. Vernal Pools

A most interesting ecological phenomenon, almost unique to the western United States, is the vernal pool. This is formed in a small, shallow sunlit swale that impounds spring rainfall and runoff for a brief period, before the water evaporates or drains away to leave the swale dry until the next raily season. Vernal pools are usually too ephemeral to support any true emergent marsh vegetation or permanent marsh wildlife. Edge or perimeter cover is usually low growing rushes, spike rushes, or sedges of moderate height. Downingia spp. ,(in the lobelia family), floating duckweeds, and a great many other beautiful and fascinating small plants appear briefly. Whole successions of microscopic plants and animals can be studied during the rich but brief existence of the pools. Here frogs, toads and salamanders lay their eggs, exist as pollywogs and larvae, and find their food. Dragonfly larvae, aquatic beetles, spiders and a host of other invertebrates occur in their time. Usually vernal pools are sufficiently well balanced so that noxious insect outbreaks, such as gnats or mosquitoes, remain under biological check -- a fact that is often difficult to impress on County health agencies or mosquito abatement districts, with budgets and payrolls invested in insecticides.

During the grading and construction for the campus buildings, a few carefully selected sites for vernal pools can be developed with only little incidental cost. For complete environmental control and safety, the shallow swale can be installed with a four-inch transite drain equipped with a stopper. Vernal pools have value for biological demonstrations, to student projects, or simply to delight the understanding eye.

7.2 Vegetation

Full benefit should be derived from the existence of such an unusual and perhaps even unique mature coastal woodland as is found here. Protection from fire, disease and other catastrophe should receive the highest priority. Fire breaks, patrol, and adequate fire control access is essential. Thorough professional study and implementation is required to resolve this very real hazard to one of the College's most valuable environmental features.

A few of the specimen trees on the campus have been discussed: the great valley oak north of the archaeology dig, the madrone by the "Deer Camp" paddock, the hybrid oaks on the northeast ridge, the "strangler fig" poison oak-tree in the grove at the northeast toe of the central knoll. There are many others which should be located and plotted in an environmental master plan.

The mature climax woodland cannot provide as highly productive wildlife habitat as would a successional vegetative phase. This is probably to the good, particularly in the case of deer and rabbits which may, even so, proliferate so enthusiastically from time to time as to require population controls. The mammals and birds of the mature oak woodlands should, however, be encouraged. Wood rats and their nests provide excellent biological study opportunity. Grey squirrels are associated with mature oak woodlands; not enough is known of their cyclic behavior or ecology. They, too, occur here and will repay study as student projects. The smaller mammals, rodents and insectivores, will increase as a result of more free water and will also provide study topics of significant value.

Quail, although most productive in successional brushland habitat, will undoubtedly respond to more free water and to the development of vegetation on the tributaries. "Guzzlers" (wildlife water storage tanks of several types) will be valuable to quail, small mammals, and as emergency water storage for fire control.

The foregoing suggestions are only a few of the many environmental enhancement procedures that can be programmed to create on this campus an inspiring example of how men can put out their hands to the land, build on it what they must have, and yet enrich instead of impoverish the world around them.

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Philip H. Arend

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43 Birds Observed on Indian Valley Colleges Campus Site, June 4, 1972

by **William Anderson and Philip H. Arend, Wildlife Associates**

Common Name	Scientific Name
Turkey Vulture	Cathartes aura
California Quail	Lophortyx californicus
Mourning Dove	Zenaidura macroura
Allen's Humming Bird	Selasphorus sasin
Ash-throated Flycatcher	Myiarchus cinerascens
Western Flycatcher	Empidonax difficilis
Western Wood Pewee	Contopus sordidulus
Violet-green Swallow	Tachycineta thalassina
Tree Swallow	Iridoprocne bicolor
Barn Swallow	Hirundo rustica
Cliff Swallow	Petrochelidon pyrrhonota
Steller's Jay	Cyanocitta stelleri
Scrub Jay	Aphelocoma coerulescens
Common Raven	Corvus corax
Common Crow	Corvus brachyrhynchos
Chestnut-backed Chickadee	Parus rufescens
Plain Titmouse	Parus inornatus
Common Bushtit	Psaltriparus minimus
Wrentit	Chamaea fasciata
Bewick's Wren	Thryomanes bewickii
Rock Wren	Salphinctes obsoletus
Western Bluebird	Sialia mexicana
Blue-gray Gnatcatcher	Polioptila caerulea
Starling	Sturnus vulgaris
Hutton's Vireo	Vireo huttoni
Warbling Vireo	Vireo silvus
Orange-Crowned Warbler	Vermivora celata
House sparrow	Passer domesticus
Western Meadowlark	Sturnella neglecta
Red-winged Blackbird	Agelaius phoeniceus
Brewer's Blackbird	Euphagus cyanocephalus
Bullock's Oriole	Icterus bullockii
Brown-headed Cowbird	Molothus ater
Black-headed Grosbeak	Pheucticus melanocephalus
Purple Finch	Carpodacus purpureus
House Finch	Carpodacus mexicanus
Lesser Goldfinch	Spinus psaltria
Rufous-sided Towhee	Pipilo erythrophthalmus
Brown Towhee	Pipilo fuscus
Lark Sparrow	Chondestes grammacus
Oregon Junco	Junco oreganus
Chipping Sparrow	Spizella passerina
Song Sparrow	Melospiza melodia

List of Plants Noted on Indian Valley Colleges Campus Site, June 4, 1972

No formal plant collection was made. Identifications were made on the spot and in the field, either from prior knowledge or after brief examination with hand lens and reference to field manuals. Although most of the plants listed will refer to specific names, others will list only the genus or higher categories.

Plant associations: G -- grassland W -- woodland
R -- riparian O -- other

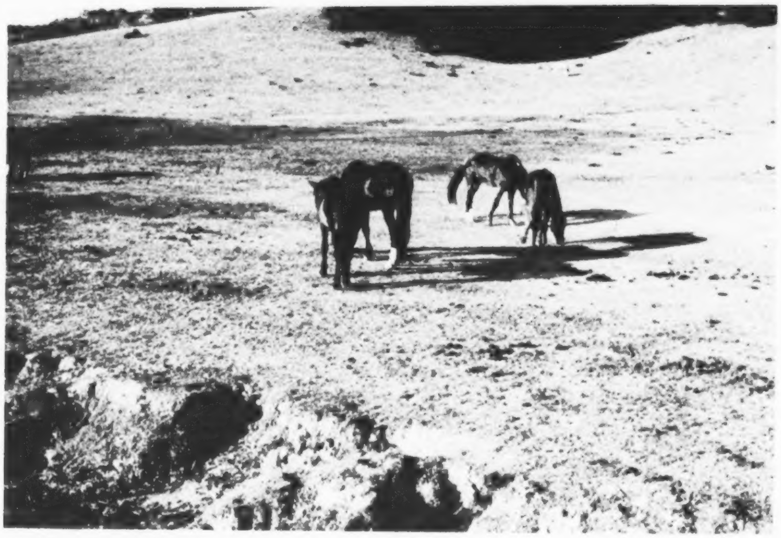
Common Name	Scientific Name	Plant Assoc.
Trees		
Valley oak	Quercus lobata	W-R
Black oak	Q. kelloggii	W-R
Interior liveoak	Q. wislizenii	W-R
Coast liveoak	Q. agrifolia	W-R
California laurel (bay)	Umbellularia californica	W-R
Buckeye	Aesculus californica	W-R
Madrone	Arbutus menziesii	W-R
Grasses		
Cheat grass	Bromus tectorum	G
Foxtail	Hordeum jubatum	G
Foxtail chess	Bromus rubens	G
Wild oats	Avena fatua	G-W
Dogtail	Cynosurus echinatus	G
Needle-grass	Stipa sp.	G
Quaking grass	Briza major	G
(Many other crasses are too close-cropped for effective identification)		
Shrubs or woody vines		
Blackberry	Rubus sp.	W
Coyote brush	Baccharis pilularis	G-W
Poison oak	Rhus diversiloba	G-W-R
Buckbrush	Ceanothus cuneatus	G-W
California sagebrush	Artemisia californica	G-W
Honeysuckle	Lonicera sp.	R
Snowberry	Symphoricarpos sp.	R
Toyon	Heteromeles arbutifolia	W
Deerweed	Lotus scoparius	G-W
Monkey flower	Diplacus auriantiacus	G

(cont.)

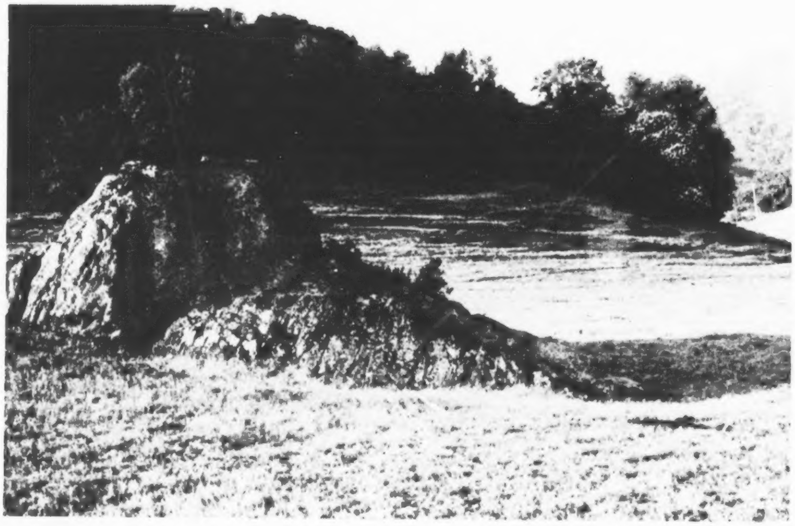
(List of Plants -- cont.)

Common Name	Scientific Name	Plant Assoc.
Forbs (non-woody flowering plants)		
Hedge-nettle	Stachys sp.	W
Brodiaea	Brodiaea sp.	G
Harvest Brodiaea	Brodiaea elegans	G
Wild iris	Iris sp.	W
Mariposa lily	Calochortus sp.	G
Gilia	Polemoniaceae family	G
Spikeweed	Hemizonia fitchii	G
Gentian	Centaurium venustum	G
Yarrow	Achillea sp.	G
Rein-orchis	Habenaria sp.	W
Filaree	Erodium sp.	G
Trefoil	Lotus spp. (2 ?)	G
Vetch	Vicia sp.	W
Bur Clover	Medicago hispida	G
Italian thistle	Carduus pycnocephalus	G
Milk Thistle	Silybum marianum	G
Blow-wives	Achyrachaena mollis	G
Desert dandelion	Malacothrix californica (?)	G
Dandelion	Agoseris sp.	G
Cudweed (Everlasting)	Gnaphalium sp.	G-W
Fiddledock	Rumex pulcher	G
Sheep sorrel	Rumex acetosella	G-W
Yerba buena	Satureja douglasii	W
Pennyroyal	Mentha Pulegium L.	G
Shining bedstraw	Galium sp.	G-W
Plantain	Plantago lanceolata	G
Coast eryngo	Eryngium armatum	G
Flowering quillwort	Lilaea scilloides	O (in horse pond)
Ferns		
Deer fern	Blechnum spicant	R
Lady fern	Athyrium filix-femina	R
Maidenhair fern	Adiantum jordani	R
Sword fern	Polystichum munitum	R
Wood fern	Dryopteris dilatata	R
Bracken	Pteridium aquilinum	R-G
Others		
Horse-tail (Scouring rush)	Equisetum sp.	W

Plate I

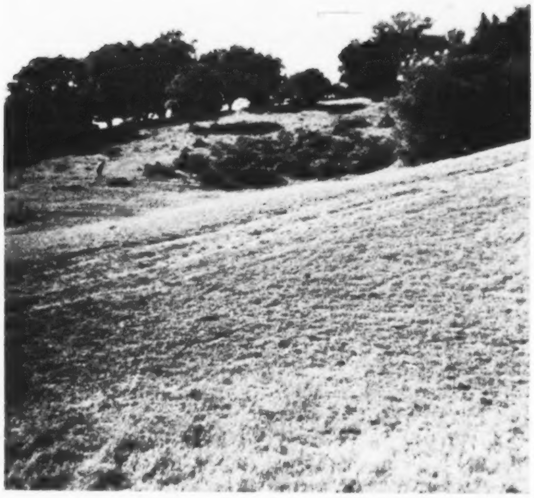


"overgrazed,
eroded
horse pasture..."



"... criss-crossed
with stock trails"
Chert outcrop bears
chaparral shrubs,
above reach of
hungry stock. Small
toyon and buckbrush
found here!

Plate II



The "chaparral" stand in the NW sector on a south-facing slope ...

(note browse-line on horizon oak, sheet erosion of foreground slope)

"Chaparral" proves to be only poison oak, deerweed, sage, grass

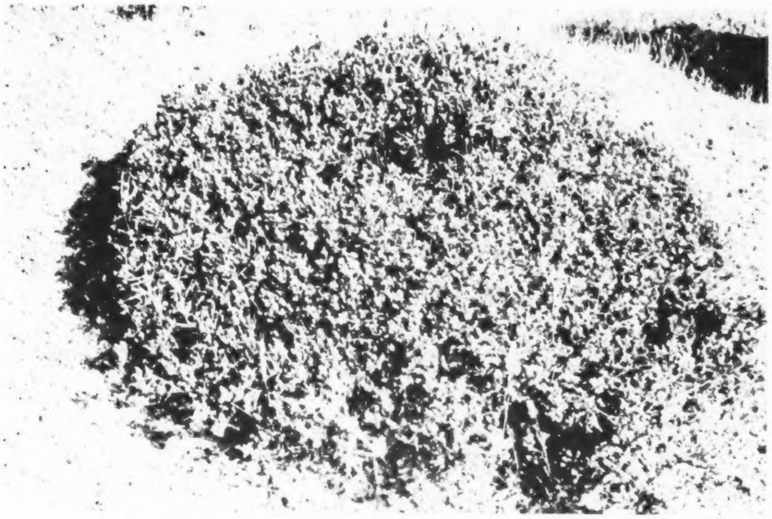
Plate III

Severe hedging on liveoak. Note characteristic "wine-glass" shape as small tree grows out of reach of browsers.

South bank of creek, riparian association. Note browse-line on mature trees, dense canopy; stunted bay "brush" in foreground.

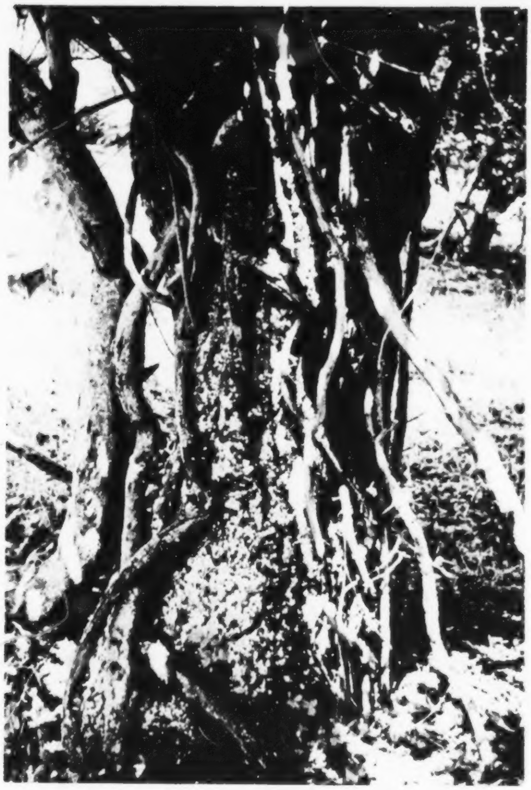
Plate IV

Approaching a clump of "chaparral" that turns out to be ....



... browsed and stunted bay, hedged into a shrub. Note that new spring growth has not been nipped.

Plate V



A "strangler fig" poison oak climbs a live-oak tree ...

... and puts leaves and berries into the sunlight.

Plate VI

"Specimen" valley oak, north of archaeology dig.

Photo taken from creek bed. Note undercut bole of bay tree; height and slope of bank; standing pool in foreground.

C. Impact on Drainage: The creeks crossing the site are looked upon as one of the most attractive features of the area. The general guiding principle during the construction of the college will be to maintain all creek beds in the most natural condition possible. The creek is seasonal with convoluted and heavily eroded banks. In some sections the bed of the creek is 15 feet below the surrounding terrain. A few of the larger trees have fallen into the creek bed due to erosion around the root system and must be removed. At the eastern boundary of the college site the creek is cluttered with debris which will also have to be cleared. The exact measures which will be employed to prevent the creek from self-destructing and to prevent unnecessary erosion of the banks and the loss of large specimen trees cannot be precisely detailed at this time; however, it is agreed that minimal creek treatment is preferable to maximal treatment. Consultants to the project architect have stated that major reduction of the self-destruction of the creek due to erosion can be affected by treating the entire water shed. By taking steps to permit establishment of the natural vegetation cover significant retention of moisture occurs reducing the velocity of run-off which, in turn, slows the erosion activity currently taking place. The steps recommended include termination of grazing, some seeding to establish a new grass cover, hand development of small erosion control dams in the small drainages in the upper watershed to catch sediment and slow water velocity and similar work. It is also agreed that where reconstruction of the stream banks is necessary it should be done by hand and use of natural materials such as rocks or logs will be maximized. A series of weirs may be built to help reduce the total flow of water during heavy run-off periods. A planting and maintenance program will be initiated to replace existing vines and other plant material that might need to be removed during construction and to add appropriate plant material that will help protect the stream banks and slow down run-off. Run-off water introduced into the stream beds as a result of the building and development operations will be handled either by "sheeting" over large areas at minimum flow rates or by depressed structures installed in such a manner as to minimize erosive action. The proposed treatment of the creek by the project and the landscape architects will be carefully reviewed by the Board of Trustees and the staff to make certain that such measures are in accord with the general guidelines.

Exhibit 6 illustrates the location of a ditch which presently drains the northeast quadrant of the college site into the creek which it joins on the properties immediately adjacent to the east. Exhibit 7 is a photograph which shows the general characteristics of the ditch. As shown on Exhibit 6, a catch basin will be installed to collect the water draining southward between the two hills on the northern part of the site. The water entering the catch basin will be redirected directly south to the creek through an underground conduit. The existing ditch will then be filled south of the catch basin. The owner of the property adjacent to the college site on the east agrees to this procedure and will also fill the ditch on his property. Exhibit 6 indicates that the redirected flow into the creek will add 120 cubic feet per second to the flow in the main creek during a 100-year storm.

Exhibit 6 also indicates that the flow of water on the southwest quadrant of the college site will be redirected into the creek at point D rather than sheetflow across the meadow into the creek to the north. The flow from point D to point B during a 100-year storm would be 325 cubic feet per second. All flows indicated on Exhibit 6 are based upon an assumed 100 percent run-off during a 100-year storm. The heaviest flow during such a storm would be 500 cubic feet per second from point B to point C.

A study to determine potential flooding of the two major wooded streams draining the campus site was conducted by Murray and McCormick, Incorporated in 1967. Their conclusion is as follows:

> "On the basis of this study it can be concluded that the reach of the two streams being considered, will not overflow their banks within the college site. Due to the erosive effect the water flow has had on the channels the existing waterway sections are, in general, completely adequate to carry the estimated 100-year storm run-off. There are two small areas where the channel section should probably be enlarged when construction proceeds on the campus, but these modifications would be very minor."

The conclusions of the investigating engineer are concurred in by the staff of the County Flood Control District. It should be pointed out that the creek bed and banks will not be dedicated to the County Flood Control District, but will be maintained by the Marin Community College District. The staff of the County Flood Control District have made several very constructive suggestions which will be considered during the site development phase.

An adverse environmental effect which cannot be avoided if the proposal is implemented is the coverage of a portion of the site by buildings or hard surfaces. A letter from Neptune and Thomas Associates, the project architects, concerning the problem is presented as Exhibit 19. The architects' study indicates that the total covered area, when the campus capacity is large enough to accommodate 5,000 students, will be approximately 4 percent of the entire watershed. Thus, the total increase in run-off that will be carried by the stream at the extreme end of the site will be approximately 4 percent which represents an additional 20 cubic feet per second. Even if the parking area were doubled when the college reaches the capacity of 5,000 students, the total covered area would represent only 5.3 percent of the entire watershed.

Since the additional run-off in the creek caused by the coverage of the site by buildings and hard-surfaced areas is minimal, it is not considered necessary to take additional mitigating measures.

A second adverse environmental effect which cannot be avoided if the proposal is implemented is the construction of the perimeter road. The perimeter road will constitute an interference with the natural run-off from the surrounding watershed. Such interference will be especially noticeable in areas where it will be necessary to fill. In such areas adequately sized culverts will be installed. In other areas, the road itself will be constructed to carry run-off water to a point at which it will be possible for it to sheet flow toward the creek.

In summary, it may be stated that the creeks on the site constitute one of the most attractive natural features and at the same time also constitute one of the most difficult problems. The source of the present erosion problem will be treated first in the watershed area, then only the most absolutely necessary measures will be taken within the stream bed to control erosion. All such measures will occur only under the supervision of the Board of Trustees and staff of the Marin Community College District. Studies have indicated that even with the coverage of a portion of the site by buildings and hard-surfaced areas, the creek is adequate to handle all drainage even during a 100-year storm.

D. Impact on Traffic: The location of a college campus in any community will inevitably increase the amount of automobile traffic on the surrounding thoroughfares. It is estimated by the Marin County Planning Department that under existing conditions each enrolled student will generate 1.7 automobile trips per day. That is, an enrollment of 1,000 students would generate 1,700 average daily trips. A student who comes to campus then leaves later in the day constitutes two daily trips. The 1.7 factor will vary depending upon the distance of the college campus from major residential areas, the availability of public transportation, the use of car pools, and the utilization of other forms of transportation such as bicycles. It seems safe to assume that the increasing concern for the preservation of the environment will result in a decreased use of automobiles and an increased use of other forms of transportation. The shift, however, will probably be gradual and for the immediate future traffic projections must be based upon the comparable existing conditions. Projections beyond 1980 are based upon the best evidence available and must be regarded as tentative. Additionally, traffic projections will be influenced and complicated by residential growth in the Novato area.

Any discussion of the projected traffic loads which result from the opening of Indian Valley Colleges and growth in the Novato area must include consideration of access to the campus.

The college district employed educational consultants early in 1967 to assist in the preparation of long-range educational and facility plans for the District. The consulting team discussed the needs of the college district with the County Planning staff during the same period of time that the County Planning staff was preparing the Novato Area General Plan. At that time, college plans called for the development of the second college to a capacity of approximately 3,200 students by 1980 with additional growth beyond that point. Present plans call for a lesser capacity of approximately 2,500 students by 1980 with incremental growth thereafter. Matters such as vehicular access, road alignment, and projected growth were discussed.

The Novato Area General Plan which was prepared in late 1967 calls for the extension of Ignacio Boulevard (presently known as San Jose Boulevard) across the northerly edge of the college site and would give access to the site from both the east and the northwest. On page 59 of the Plan it indicates that "Ignacio Boulevard . . . will require connection through the northerly part of the College of Marin (now Indian Valley Colleges) and the Pacheco Ranch ..." The Novato Area General Plan proposes that other connecting links within the Novato area be developed to make Ignacio

Boulevard useful to west Novato. The college plans include the immediate basic connection of Ignacio Boulevard directly into the college site and the provision for the future construction of the extension of Ignacio Boulevard across the northerly edge of the site on into west Novato. Exhibit 20 illustrates the proposed road across the northerly edge of the campus with two alternate connections with Indian Valley Road. Also illustrated is the direct access into the campus from Ignacio Boulevard and a proposed extension of Rowland Boulevard.

District plans for Indian Valley Colleges have proceeded on the basis of the road network adopted at that time. On page 41 of the Novato Area General Plan, it states "Good access to the campus will be provided by the extension of Ignacio Boulevard whose alignment is proposed to traverse the northern most portion of the campus to avoid splitting the college complex and by extension of Rowland Boulevard to join Ignacio Boulevard within the campus." This proposal would provide access to the college site at three points; Ignacio Boulevard on the east, Ignacio Boulevard on the northwest, and Rowland Boulevard. It also adheres to a most sound planning principle of not bisecting a campus with a through road.

Extensive study is now being undertaken by the County Planning Commission and the Novato Planning Commission and their staffs of the revision of the Novato General Plan. The planning staff of the Marin Community College District and the President of Indian Valley Colleges have met several times with representatives of the county and Novato planning staffs. The site development plan for Indian Valley Colleges had previously been approved by the Board of Trsutees of the Marin Community College District and by an ad hoc citizens committee selected by the Board. The project architect is in the process of preparing working drawings for the approved site plan. A series of meetings were held during this past summer by the Board of Trustees of the Marin Community College District when the matter of access to the Indian Valley Colleges campus was considered again. Representatives of the county and Novato planning commissions were present. The official action of the Board of Trustees urged the Marin County Board of Supervisors and the Novato City Council, in accordance with the adopted Novato Area General Plan, to proceed with the steps necessary to provide sufficient vehicular access to the Indian Valley Colleges campus which would accomplish the following:

1. Eliminate overcrowding of local streets.
2. Provide convenient access to the college for students from the District.
3. Not interfere in any way with the instructional program of Indian Valley Colleges through the possibility of an east-west road being developed through the center of the campus.
4. Keep options for multiple access to the college open by not taking any action that might block future development of an east-west through road across the northern edge of the site, in accordance with the present Novato Area General Plan, and site plans submitted by the Marin Community College District to the Board of Governor's of the California Community Colleges.
5. Remain consistent with the present position of the Board of Trustees of the Marin Community College District not to favor satellite parking locations on the north-west corner of the campus.

The action of the Board of Trustees also included a statement to the effect that the Board did not favor satellite parking areas on the campus and clearly indicated that the problem of adequate access to the campus is of considerable importance and that the involved county and city agencies should keep those options open which would permit additional access to the college campus at a later time.

Immediate access to the campus will be provided by a westerly extension of Ignacio Boulevard directly into the campus site. San Jose Village, a townhouse complex located immediately south of Ignacio Boulevard and bordering on the college site has already been approved by the Novato City Council. The precise alignment of Ignacio Boulevard has been determined jointly by the Novato Planning Staff, the developers of San Jose Village, and the planning staff of Marin Community College District.

During the past two years the Coordinator of the Balanced Transportation Program of the County of Marin has been consulted on several occasions concerning traffic projections on surrounding thoroughfares. Public transportation routes to the college have been discussed with the Assistant General Manager, Marin County Transit District who has indicated a willingness to arrange meetings between the college planning staff and the personnel of the Golden Gate Transit Authority. Such meetings should be productive in terms of arranging for convenient and frequent schedules to the college for students from the surrounding areas. The Assistant General Manager, Marin County Transit District has also advised the project architect on campus road design as it relates to use by buses.

Exhibits 21 and 22 were prepared by the Coordinator of the Balanced Transportation Program of the Marin County Planning Department. Exhibit 21 illustrates the 1980 projections of traffic flow in terms of average daily trips on South Novato Boulevard, Rowland Boulevard, Sunset Parkway, and Ignacio Boulevard not including college traffic. The planning staff of the city of Novato have indicated that maximum traffic loads are as follows:

Sunset Parkway	10,000 ADT
Rowland Boulevard between South Novato Boulevard and Highway 101	20,000 ADT
South Novato Boulevard	14,000 ADT
Ignacio Boulevard	20,000 ADT

It will be seen that all 1980 traffic projections are well within the maximums.

Exhibit 22 illustrates the 1980 projections including the college traffic generated by a campus with an enrollment of 2,500 students. Again, it will be seen that the total traffic projections in terms of average daily trips are within the maximum loads. Exhibit 22 is based upon the assumption that there will be only one access, Ignacio Boulevard, to the campus of Indian Valley Colleges. Exhibit 23 illustrates the volume of 1980 college-generated traffic only.

Although the traffic load on Sunset Parkway is within the maximum set by the city, an additional access route into the campus would serve to keep the traffic load on Sunset Parkway under the maximum figure even after 1980. Exhibit 24 illustrates the possible effect of an additional access to the campus from Rowland Boulevard. The traffic load figure for Rowland Boulevard is based upon two assumptions. The first is that the traffic load generated by additional residential development would increase present loads by approximately 25%. The second assumption is that the college traffic would divide almost evenly between

Rowland Boulevard and Sunset Parkway. It will be observed that in the case of the additional access route to the campus the traffic load on Sunset Parkway is almost 2,000 average daily trips below the maximum load of 10,000 average daily trips. Similarly, a reduction in the traffic load on both Rowland Boulevard and Sunset Parkway would be observed if a third access route from Indian Valley Road were constructed in accordance with the 1967 Novato General Plan. In that case, traffic loading on both Sunset Parkway and Rowland Boulevard would not reach maximums for several years beyond 1980. If it is assumed that there will be greater use of public transportation and that other forms of transportation will be developed within the next decade, it is likely that no overloading of thoroughfares surrounding the campus would be experienced by 1990 even if the campus enrollment were to increase to approximately 5,000 students each of whom would generate less than the presently projected 1.7 average daily trips per day. Obviously, such projections are not based on "hard" data. Unfortunately, there are many unknowns such as:

1. What factor can be used to determine the number of average daily trips generated by each student in 1980 or 1990?

2. Will local ordinances or state laws restrict the use of private automobiles in the future?

3. What developments will take place in types and methods of public transportation in the next decade?

4. What changes might take place in higher education which might reduce the number of times a student must be physically present on campus?

5. What will be the long-term effect of increasing efforts to restrict or limit population growth and residential development in northern Marin?

6. What will be the effect of the limited number of parking spaces on the college campus?

At the request of the Marin Community College District the Coordinator of the Balanced Transportation Program prepared Exhibit 25 on June 15, 1972 which is a projection of traffic loads on the major thoroughfares surrounding the campus of Indian Valley Colleges assuming that no campus were located on the site. All projected loads are within the designed capacities. Exhibit 26 adds to the 1990 traffic projections college-generated traffic assuming an enrollment of 5,000 and only one access route to the college. The college-generated traffic projections are based upon the 1.7 ADT per enrolled student factor and must, therefore, be considered as maximum projections since all indications point to a reduction of the factor in the future through utilization of alternate forms of transportation. However, when the 1.7 factor is applied to the college enrollment, Exhibit 26 indicates that Sunset Parkway would be overloaded by approximately 3,000 ADT. Obviously, if prior to 1990 the projected growth occurs, an additional access route to the campus must be developed if Sunset Parkway is not to be overloaded.

Exhibit 27 is a projection of traffic load which assumed that an additional access were provided from Rowland Boulevard. To arrive at the Rowland Boulevard ADT the existing traffic load was increased by 25% and the college-generated traffic was evenly divided between Sunset Parkway and Rowland Boulevard. It can be seen that the additional access would probably reduce the Sunset Parkway ADT to the point at which the overload would be approximately 150 ADT.

Exhibit 28 illustrates traffic loads which would occur if three access routes were available to students. The projections are based on the assumption that the ADT on both Rowland Avenue and Sunset Parkway would be reduced by 1,000

ADT each. At this time there is no way of knowing the accuracy of such projections, however, a study dated November 10, 1970, by the Coordinator of the Balanced Transportation Program which was submitted to the staff of the Marin County Planning Department indicated that the college would generate 2,000 ADT over an access route from Indian Valley Road.

In summary, the various studies of traffic volumes indicate that:

1. No overloading of Novato area streets would occur until after 1980 when the college enrollment exceeds 2,500.
2. A second access to the college before 1980 will tend to keep traffic volume well below maximum loads.
3. There will be a definite need for a second, and somewhat later a third, access route to the college after 1980.
4. All traffic projections are based upon a number of assumptions which cannot be supported by substantive data at this time. However, the ADT's referred to in this report probably represent maximums.

Although the Board of Trustees of the Marin Community College District have by official action opposed the concept of constructing isolated parking "pods", the notion is mentioned here since such a solution has been proposed by both the City of Novato and county agencies. Exhibit 29 indicates the possible locations in which parking pods could physically be constructed. From a traffic load perspective, the advantage of parking pods is that they do not require through roads to service students coming to the campus from surrounding communities. Thus, parking pod B would serve students coming to the campus from the west Novato and Indian Valley Road areas. Similarly, parking pods B and A would serve students coming from the north and east respectively. The opposition of the Board of Trustees to the concept of parking pods is based upon the following factors:

1. Since the campus is very large in size, the location of pod B, particularly, would require students to walk for approximately twenty minutes to reach the main building area, a considerable distance for adults and for all students during inclement weather. It is quite possible that students would not use parking pod B but would rather drive the additional distance to get to parking pod A which is closer to the building area.

2. For the purpose of servicing, cleaning, landscaping, fire protection, and security, it would undoubtedly be necessary to construct some type of connecting road between the pods. The pressure from students and the community in general to open such connecting roads to the general public would be very difficult to resist. If the connecting roads are opened the college must contend with a through road across the campus. Such a road is unacceptable from a number of points of view.

3. The proposed locations of pods B and C as shown on Exhibit 29 involves the use of sloping land. Construction of parking areas on such land requires more grading and leveling than the Board is prepared to accept on this site. Additionally, in terms of the number of parking spaces per acre, it is inefficient to use sloping land for parking.

Notwithstanding such objections, the parking pod concept is to be considered an alternative to the construction of through roads. The final determination of whether to construct parking pods or through roads must be made in the future with due consideration given to the needs of the community, the needs of students, and environmental issues.

Mitigation Measures. The possibility that alternate forms of transportation will be developed within the next fifteen or twenty years or that local, state, or federal legislation will limit private automobile travel, should not be discounted. Indeed, it is possible that such developments may very well be the most important mitigation measures with regard to traffic volumes within communities. The following are some of the mitigation measures the District could undertake in the immediate future:

1. Everything possible will be done to make public transportation more convenient and attractive to all students attending Indian Valley Colleges. The approved plans have taken into consideration adequate turning radii on all roads on the campus. A commodius and convenient bus shelter area will be constructed immediately. The shelter will be equipped with comfortable benches, telephones, and water fountains. The Assistant General Manager of the Marin County Transit District has already offered to arrange a series of meetings between the planning staff of the Marin Community College District and the Golden Gate Transportation authority. The purpose of the meetings will be to explore inducements designed to make bus transportation more attractive to students, to arrange

frequent and convenient schedules, and to explore areas in which the two concerned agencies may cooperate.

2. The initial parking area will accommodate approximately 900 automobiles and is considered to be minimal in size. Additional parking areas will be constructed only after all other alternatives have been explored.

3. Although the District planning staff has already explored the feasibility of a satellite parking area with shuttle buses running to the campus, and although the Board of Trustees have rejected such a plan, future conditions may make a satellite parking concept more attractive. Such a plan would be quite expensive and at this point the District does not have sufficient funds with which to implement such a plan even if it did prove to be more feasible. Any future study would include the possible use of idle school buses.

4. The feasibility of off-campus learning centers which might reduce student travel to the college campus will be explored. Such plans involve considerable additional expense in leasing costs of off-campus facilities.

5. Bicycle paths will be constructed on the campus to connect with proposed bicycle paths now being considered by the Novato Planning Department. Exhibit 30 illustrates the basic trail system under consideration by the Novato Planning Department. An important element in encouraging the increased use of bicycles is the provision of secure bicycle parking areas. Several systems for parking bicycles are presently under consideration. The location of bicycle parking areas is also under study. Such locations should be sufficiently open to provide security but not so prominent that they detract from the beauty of the natural setting of the campus. The district planning staff will continue to work with city and county agencies to do everything possible to increase the use of bicycles by students coming to the college.

6. Students will be required to pay a parking fee which is set annually by the Board of Trustees within the maximum prescribed by state law. It is possible that reduced fees could be charged to students who establish car pools.

7. The college through official bulletins and publications to students will continually stress the need to preserve the campus environment and to reduce the use of automobiles. It is hoped that a major instructional program

at the college will be concerned with environmental issues. Students enrolled in such a program will be of great help in making all of the students at the college aware of the campus-related problems.

E. Impact on Air Quality: Since any large concentration of automobile traffic is likely to produce some degree of air pollution as a result of the emissions of internal combustion engines, the district planning staff contacted the Bay Area Air Pollution District to determine whether a serious problem would occur. A letter dated March 10, 1972 from Mr. Milton Feldstein, Director of Technical Services, Bay Area Air Pollution Control District indicates that a serious problem would not exist even in 1980 with a campus of 2,500 students producing approximately 4,000 average daily trips. Mr. Feldstein's assessment of the problem was based upon today's average vehicle emissions and he stated that by 1980 standard emissions should be substantially reduced. Recent actions of Federal and State agencies indicate that automobile manufacturers will be required to reduce vehicle emissions. Also, the probability that emission-free forms of transportation will be developed in the near future indicates that a serious air pollution problem will not occur as a result of automobile traffic to and from the college.

Since the potential for air pollution is directly related to the number of average daily trips generated by students enrolled at the college, the mitigation measures would in most respects be identical to those enumerated in the portion of this report concerned with traffic. However, since the college will have a rather large automobile mechanics program, there will be many ways in which that program can be related to an ongoing program of vehicle emission inspection and maintenance of pollution control devices.

F. Impact on Housing: Community junior colleges are characteristically commuter colleges. They primarily serve students who are residents of the local community who are either living with parents or living in their own homes or apartments. Only a few community colleges provide on-campus dormitory housing for students and these primarily serve a large rural district.

Movement of students from one district to another is generally limited because most community college districts require permits to be issued for students who come from other districts. The sending district normally is required to pay tuition costs and a seat tax.

The Marin Community College District requires out-of-district permits for all students attending from other districts and no out-of-state students are permitted to enroll. Approximately 92% of the students attending the College of Marin are bonafide residents of Marin County. Approximately 2% of the enrollment is composed of foreign students who constitute a very desirable addition to the student body.

Recent legislation permits 18-year-old students who are residents of California to establish their own residence in any community college district in the state. It is anticipated that there will be some migration of students to the more attractive districts such as Marin. Unfortunately, at this point, it is not possible to accurately predict the magnitude of the migration of students both in and out of this District. It is also not possible to accurately predict the number of students who would wish to enroll in Indian Valley Colleges as opposed to the College of Marin. There is good reason to believe that the greatest enrollment pressure from migrating students would be experienced in the College of Marin and that the majority of such students would attempt to find housing accommodation in the central Marin area.

Legislation has been enacted that requires a student to live in a community college district for one year before he becomes a resident student. Obviously, such legislation will tend to reduce the number of students migrating from one community college district to another.

Non-resident students from other districts at the College of Marin experience great difficulty in finding suitable housing accommodations at prices they can afford to pay. Additionally, students frequently find landlords are reluctant to rent apartments to students. Undoubtedly the lack of housing for students has discouraged some students from attempting to transfer to the College of Marin from other community college districts. There is reason to believe that a similar condition will exist at Indian Valley Colleges. Because of the nature of development around the college, one would expect that it would be more difficult to find student housing in the Novato area than in the central Marin area.

The potential need for student housing is complicated by the result of maximum college capacity and the legal status of enrollment priorities. Colleges cannot be expanded indefinitely in any given year. Staffing is done on an annual basis and only a minimum amount of flexibility is generated by the employment of part-time instructors. As enrollment proceeds, and as classes reach their maximum sizes, students begin to experience increasing difficulty in enrolling in a desired program. Eventually, no additional spaces are available in classes. The net result is that some students are unable to register and are turned away. It is hoped that the Marin Community College District will be able to establish enrollment priorities which will permit graduates of Marin high schools and other bonafide residents of Marin County to enroll first and that students who have recently moved to this County will enroll if classes are available.

The enrollment at the College of Marin will be fixed at 5,000 students beginning in the Fall of 1974 and the enrollment of Indian Valley Colleges -- initially 1,350 students will expand only as population growth demands.

However, since the student housing needs in the Novato area are a concern of both the Novato Planning Commission and the Novato City Council, some very tentative projections should be made. At the recent meeting of the Novato City Council, the following policy was accepted:

> Assure that sufficient student housing will be provided throughout the Novato area to meet the need created as residents of that area cause Indian Valley Colleges to develop and grow.

This commendable action by the Council indicates an interest in the development of Indian Valley Colleges and a concern for the impact the college will have on the community. In achieving the goal of adequate student housing, it might be well to remember that in past years dormitory-type facilities lost popularity with students and that designated student housing areas are frequently troublesome. Thus, it would probably be prudent to think less in terms of student housing *per se* and more in terms of general accommodations dispersed throughout the city.

Some attempt should be made to estimate student housing needs in the Novato area no matter how hazardous such an attempt might be. At the present time, 92% of enrolled students at the College of Marin are bonafide residents of the County. If it is assumed that the present rate of 8% of non-resident students, no matter how legally classified, will double, that all such students will seek housing accommodations in the Novato area, and that the enrollment of Indian Valley Colleges will be 1,350 students in the Fall of 1974, then the number of students seeking accommodation in the Novato area at that time will be approximately 216 (16% of 1,350). When the college reaches an enrollment of 2,500 students in the Fall of 1980, approximately 400 students would be seeking housing accommodations. Sometime after the year 2,000 when the college reaches an enrollment of 5,000 students approximately 800 students would be seeking housing accommodations. It is the feeling of the District planning staff that the projections listed above represent maximums which are not likely to occur. Further, it would seem reasonable that by 1980, 400 students could find accommodation within a city of 40,000 without generating serious environmental problems.

It is very difficult to predict what kinds of accommodations students will seek. Certainly the range would be from single occupancy light housekeeping rooms in private homes to comparatively expensive apartments shared by three or four students. Presently, a very popular form of student housing is the cooperative in which a number of students share expenses and work in a large house.

Mitigation Measures. The Board of Trustees of the Marin Community College District has consistently, and will continue to, establish enrollment priorities designed to provide community college education to the bonafide residents of the County. Within legal limits, out-of-state students are not, and will not be, permitted to enroll in the College of Marin or Indian Valley Colleges. Expansion of Indian Valley Colleges will be limited to that which is necessary to care for the educational needs of the residents of Marin County.

III. ALTERNATIVES

The Board of Trustees of the Marin Community College District has frequently reiterated the need for an additional campus and its commitment to construct that campus by the Fall of 1974. Thus, it must be assumed that not building a college in northern Marin is not a viable alternative. The only alternative to the proposal then is to build a campus on some other site. Considering that the Marin Community College District began purchasing the present site almost twelve years ago, that working drawings for site development are nearing completion, and that the construction of site development is scheduled to begin early in the spring of 1973, any change to an alternative site at this time would result in a serious delay in providing urgently needed educational facilities in the Novato area and a considerable loss of funds already invested in master planning, preliminary plans, and working drawings for site work and buildings. Also, the voting on the bond measure presented to the public in November, 1971, indicated that 64% of the voters in Novato apparently supported the plan to construct the college as planned with the support of bond funds. It is also noteworthy that over 61% of the voters in Marin County supported the November, 1972 state-wide bond issue for community college construction.

Even if it were feasible to move the college to another site, consideration should be given to alternate uses for the 333 acre site. It could be preserved as open land. The cost would be very great as the market value for the site is estimated to be considerably in excess of a million dollars which makes its acquisition for open space unlikely. One other possible alternative would be to permit a developer to purchase the college site which is unquestionably very suitable for residential development. A townhouse development might be considered for the college site similar to the one approved by the Novato Planning Commission (79 townhouse units on approximately 15 acres) contiguous with the western boundary of the college site. The college development includes only 80 acres of the total 333 acre site, which means a great deal more open land would be maintained for public use by building the college than would be the case if the land were subdivided for residential use. It is, of course, the objective of the Board of Trustees of the Marin Community College to encourage public use of the college site.

In summary, it is evident that additional college facilities will be required in the north Marin area by the Fall of 1974. The acquisition of the site as open or park area does not appear to be a viable alternative. The development of the college site as residential property has many disadvantages while the projected use of the land for a college site would provide needed educational facilities in the northern Marin area and at the same time preserve a very large proportion of the site for public use as open land.

IV. THE RELATIONSHIP BETWEEN LOCAL SHORT-TERM USES OF MAN'S ENVIRONMENT AND THE MAINTENANCE OF ENHANCEMENT OF LONG-TERM PRODUCTIVITY.

The use of the environment for this project is essentially the same in both the short-term and the long-term. It is most probable that a college will be required in its proposed location far into the foreseeable future. No other use of the property is contemplated.

The need for oollege facilities in the north Marin area has been definitely documented. The presence of a community junior college which offers a comprehensive program of studies will be of great benefit to the present and future citizens of the area. In addition to the direct educational and cultural benefits, the college, which will make use of only 80 acres of the 333 acre site, will preserve a very beautiful natural area of considerable size for the continuing benefit of the public and will, in this manner, maintain and enhance the long-term productivity of the environment included with the college boundaries.

V. IRREVERSIBLE ENVIRONMENTAL EFFECTS

The construction of a college on the proposed site involves a commitment of approximately 80 acres for this purpose with the balance of the 333 acre site being preserved as open land. In a sense the impact of buildings, roads, and parking areas is reversible. That is, such developments could be removed and the total site restored to a natural condition. An exception, of course, being the vegetation and trees that were removed as a result of construction. It is noteworthy that more trees and vegetation will probably be provided as a result of the development of the college than currently exists. Although it is not really likely that a college would be removed once it has been established, it is reasonable to consider that elements such as parking lots can be removed at a future date if modes of transportation change and the lots are not longer required. As indicated in Section II B of this report, it is most likely that the portion of the site not developed (approximately 250 acres) will be enhanced rather than harmed and will become available for public use.

It is the intention of the Marin Community College District to preserve the creek in the most natural condition possible. Any erosion control measures which might be found necessary will assist in maintaining the natural beauty of that portion of the site. However, no irreversible measures are contemplated.

It will be the constant objective of the Marin Community College District to enhance the proposed site and make it available for public use.

REFERENCES

Regional Planning Study, Marin and Sonoma Community College Districts, May, 1970.

Multi-Campus District Master Plan, 1967-1980 — Four volumes by Management and Economics Research Incorporated, November, 1961.

Department of Finance enrollment projections for the Marin Community College District through 1980-81 — June, 1972.

Initial Studies of Flood Control, Geology and Soil Engineering for Proposed North Campus by Cooper Clark and Associates, August 22, 1967.

Novato Area General Plan, Marin County Planning Department, October, 1967.

Official minutes of the Board of Trustees of the Marin Community College District meetings.

EXHIBITS

1. Location of site
2. College of Marin buildings and departments housed
3. Photographs of site
4. Topography
5. Geological formations
6. Map of ditch and creek
7. Photographs of drainage ditch
8. Campus walks, courts, and clock
9. Campus lighting
10. Campus landscaping and irrigation
11. Campus storm drainage
12. Photographs of parking area
13. Photograph of area for possible expanded parking
14. College "C" and Library
15. Physical Education and Theatre
16. Summary of estimated contract costs
17. Site Plan - Initial Facilities
18. Site Plan - Facilities for 5,000 students
19. Neptune and Thomas Associates February 10, 1972 letter
20. Site access
21. Traffic - Average daily trips 1980 without college
22. Traffic - Average daily trips 1980 with campus of 2,500
23. Traffic - Average daily trips 1980 college only
24. Traffic - Average daily trips 1980 with second access
25. Traffic - Average daily trips 1990 without college
26. Traffic - Average daily trips 1990 with college of 5,000
27. Traffic - Average daily trips 1990 with second access
28. Traffic - Average daily trips 1990 with third access
29. Appropriate locations of parking nodes
30. Basic trail system - horse and bike trails

Exhibit 1

LOCATION OF INDIAN VALLEY COLLEGES SITE

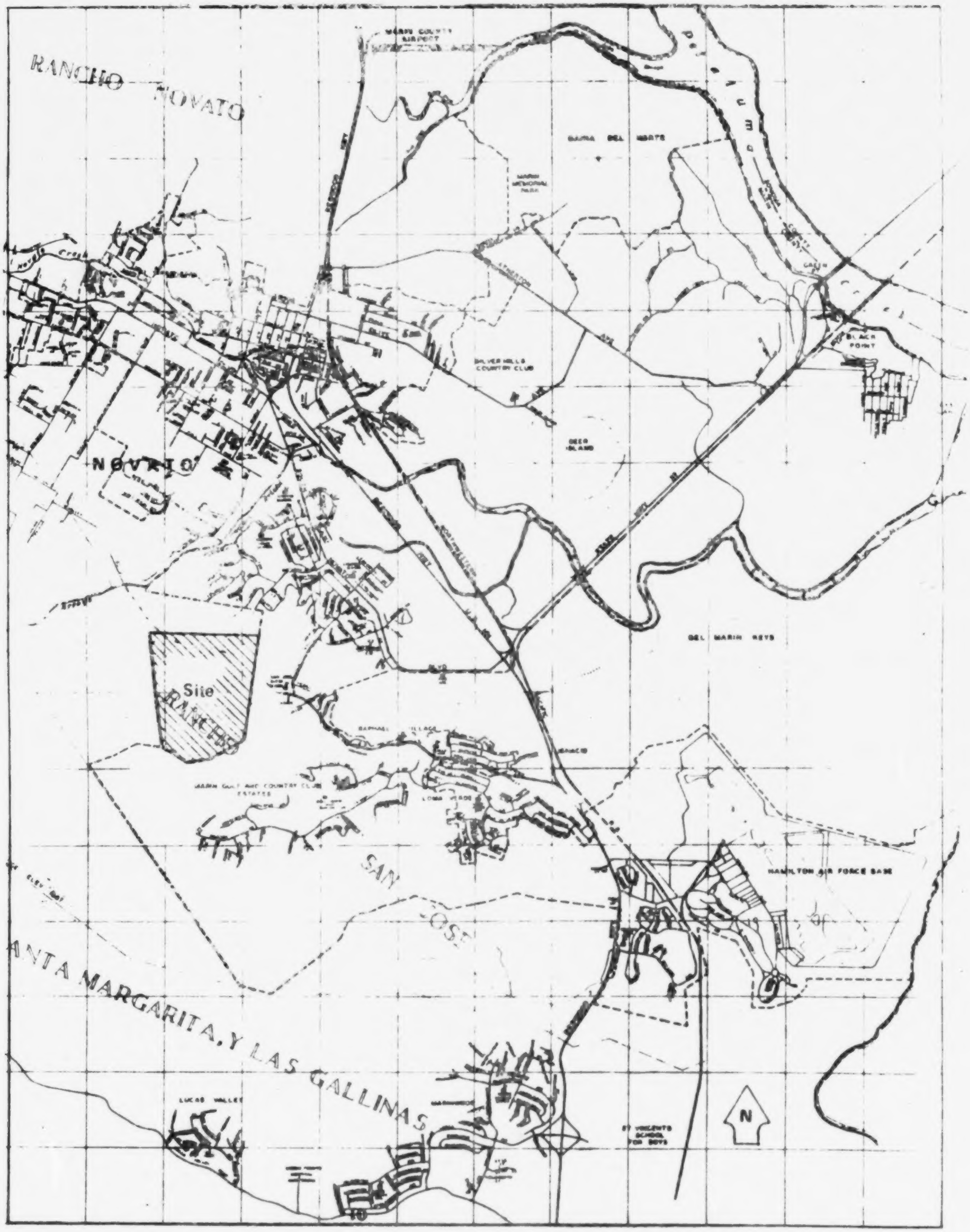

MARIN COUNTY AIRPORT
RANCHO NOVATO
Petaluma
BAHIA DEL NORTE
MARIN MEMORIAL PARK
ATHERTON AVE
SILVER HILLS COUNTRY CLUB
DEER ISLAND
BLACK POINT
NOVATO
BEL MARIN KEYS
Site
RANCHO
RAPHAEL VILLAGE
IGNACIO
MARIN GOLF AND COUNTRY CLUB ESTATES
LOMA VERDE
HAMILTON AIR FORCE BASE
SAN JOSE
SANTA MARGARITA, Y LAS GALLINAS
LUCAS VALLEY
MARINWOOD
ST VINCENTS SCHOOL FOR BOYS
N

EXHIBIT 2

COLLEGE OF MARIN

BUILDINGS AND DEPARTMENTS HOUSED

COMPLETED FACILITIES

Science Center

Mathematics
Engineering
Biology
Geology
Physics
Chemistry

Fine Arts Building

Drama
Music

Harlan Center

Nursing Education
Vocational Nursing
Communications
Dental Assisting
Humanities
Speech

Physical Education Center

Physical Education

FUNDED OR PARTIALLY FUNDED CONSTRUCTION

Library

Library
Computer
Bookstore
Instructional Services
    (audio visual, duplicating)
Support Facilities for
    Speech
    Foreign Language
    Music
    Other

Remodel Chemistry/Business/Olney

Foreign Language
Business and Economics
Social Sciences, partial

Remodel Art

Art

FUTURE PROJECTS

Remodel Old Library/ Engineering/Industrial Arts

Home Economics
Machine and Metal Technology
Auto Mechanics
Behavioral Sciences

Classroom Center

College Administration
Counselling
Social Sciences, partial

April 26, 1972

EXHIBIT 3

"... typical views of the site."

Exhibit 4

TOPOGRAPHY OF INDIAN VALLEY COLLEGES

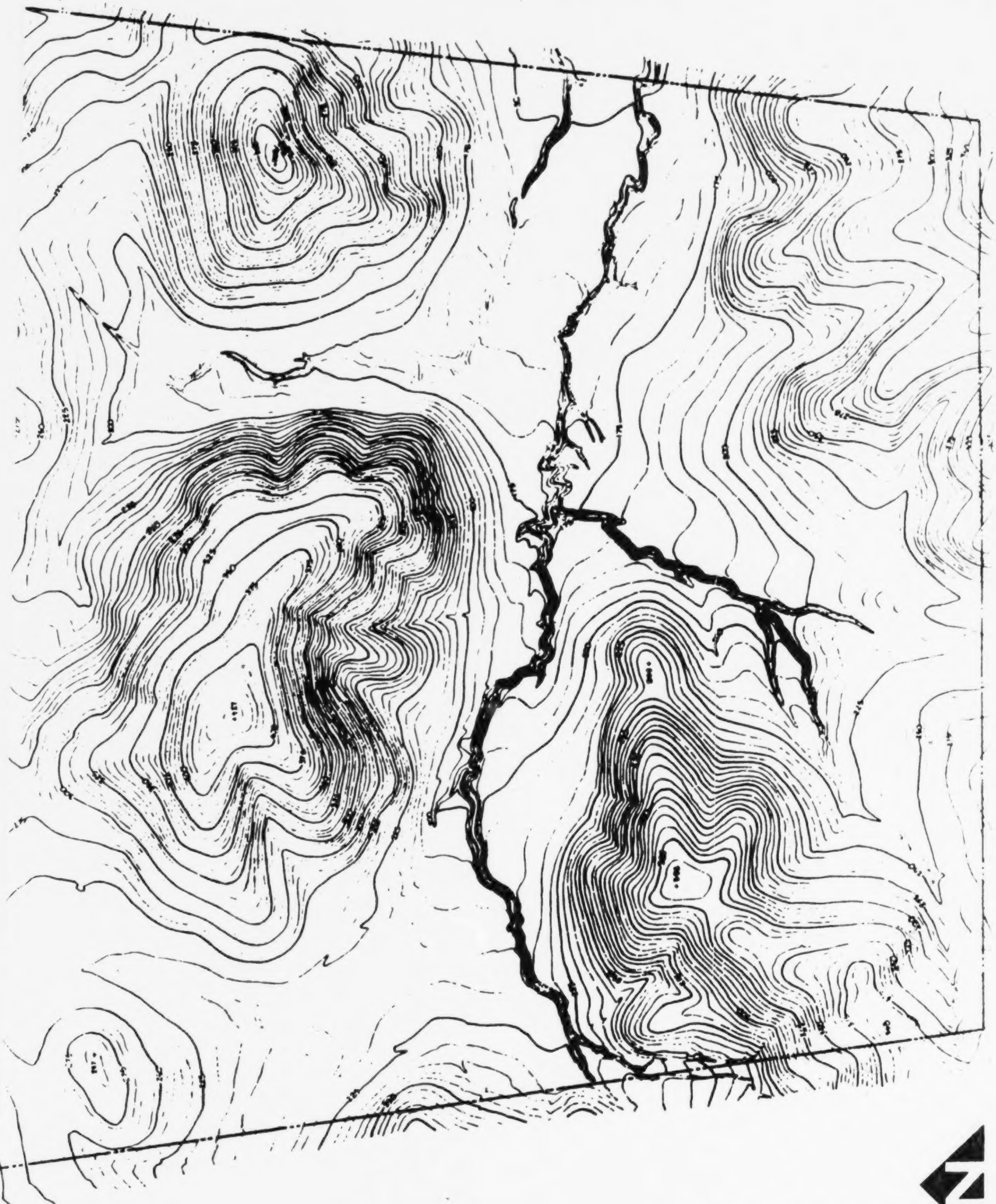
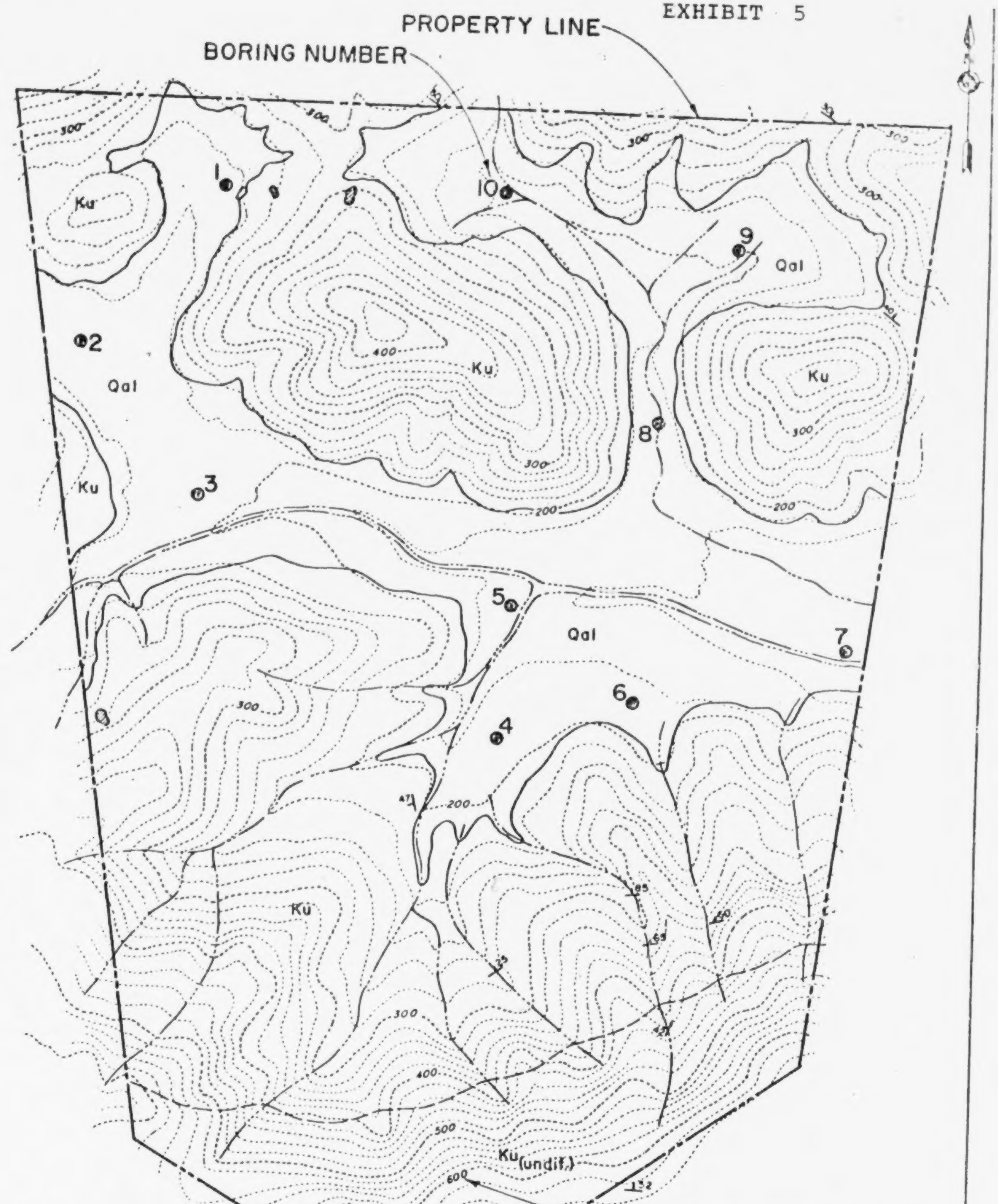


EXHIBIT 5


PROPERTY LINE
BORING NUMBER
1
2
3
4
5
6
7
8
9
10
Ku
Qal
Ku(undif.)
300
400
200
500
600
47
35
55
60
32
ELEVATION OF EXISTING GROUND SURFACE IN FEET

LEGEND:

Qal	ALLUVIAL DEPOSITS
Ku(undif.)	MASSIVE ARKOSIC SANDSTONES WITH MINOR SHALE INTERBEDS
Ku	SHALES AND SILTSTONES WITH MINOR SANDSTONE INTERBEDS
30 ⊥	STRIKE AND DIP OF BEDS
0	CHERT
0	SLIDES

PLOT PLAN

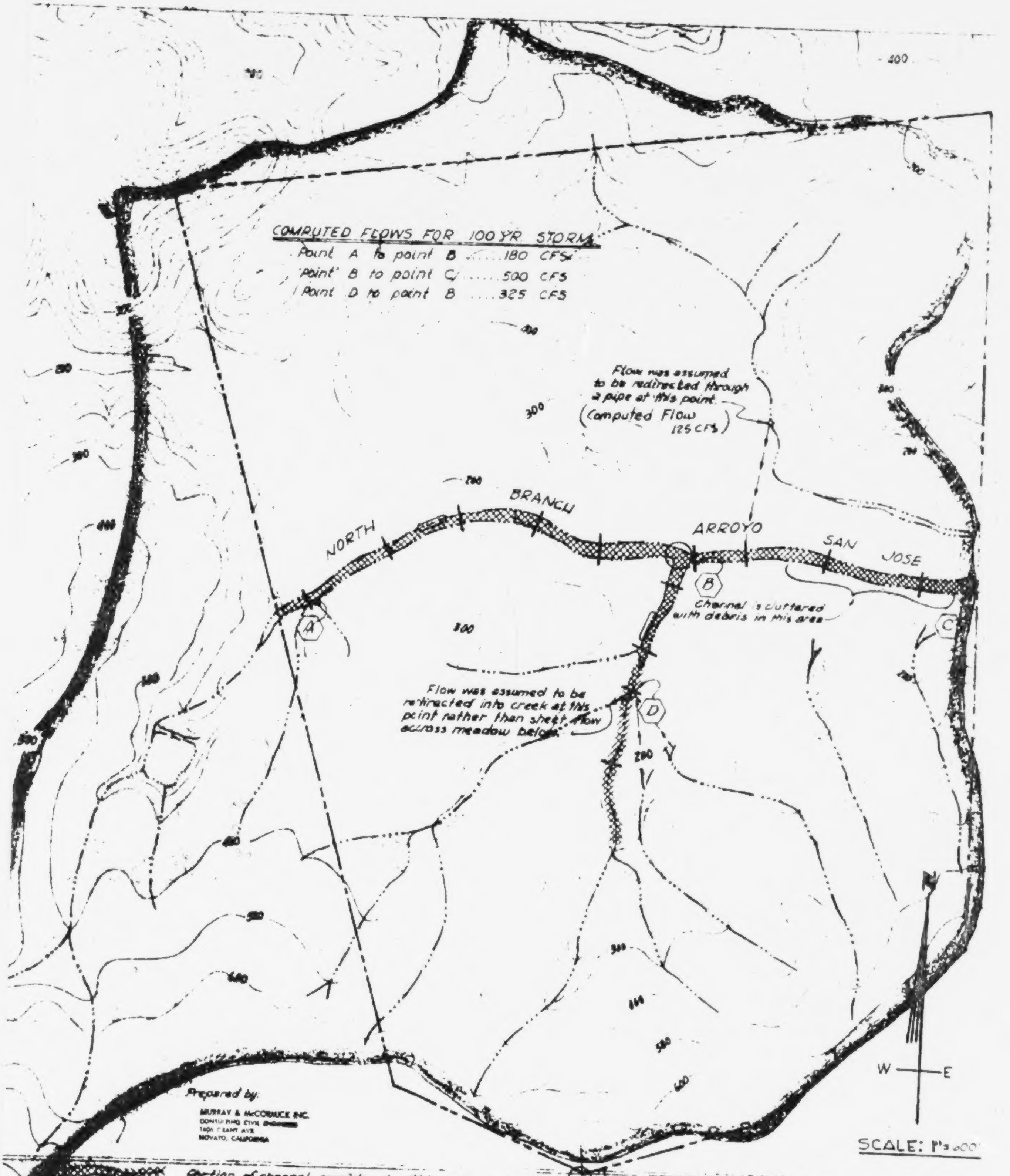
SCALE : 1" = 600'

REFERENCE:
BASED ON CITY OF NOVATO AND
WATERSHED TOPOGRAPHIC MAPS
PREPARED BY MURRAY & McCORMICK, INC.,
CONSULTING CIVIL ENGINEERS, NOVATO, CALIF.

COOPER · CLARK & ASSOCIATES
FOUNDATION ENGINEERS & ENGINEERING GEOLOGISTS

PLATE 2

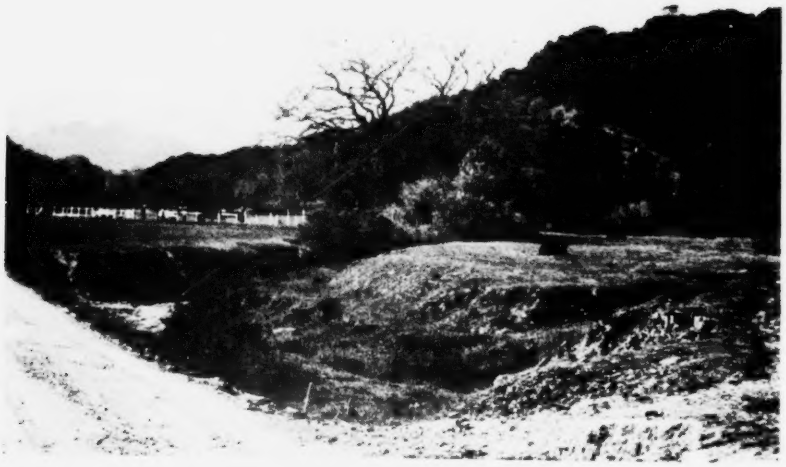
EXHIBIT 6

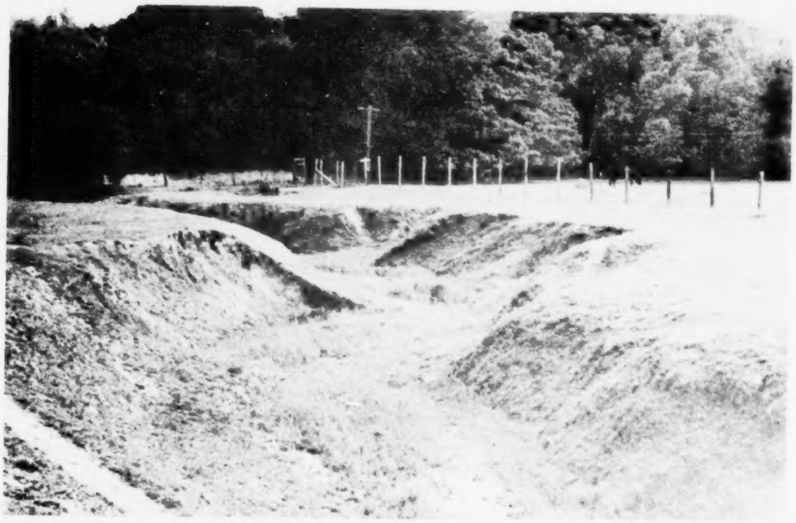

COMPUTED FLOWS FOR 100 YR STORM
Point A to point B ......180 CFS
Point B to point C ......500 CFS
Point D to point B ......325 CFS
Flow was assumed to be redirected through a pipe at this point.
(Computed Flow 125 CFS)
NORTH BRANCH ARROYO SAN JOSE
A
B
C
D
Channel is cluttered with debris in this area
Flow was assumed to be retiracted into creek at this point rather than sheet flow accross meadow below
400
300
200
500
600
N
W
E
Prepared by:
MURRAY & McCORMICK INC.
CONSULTING CIVIL ENGINEERS
1601 GRANT AVE
NOVATO, CALIFORNIA
SCALE: 1"=600'
Portion of channel considered within this study
Location of specific sections checked
Restricted channel section or possible slide area
PLAT No 2

MARCH 1967

281 0010

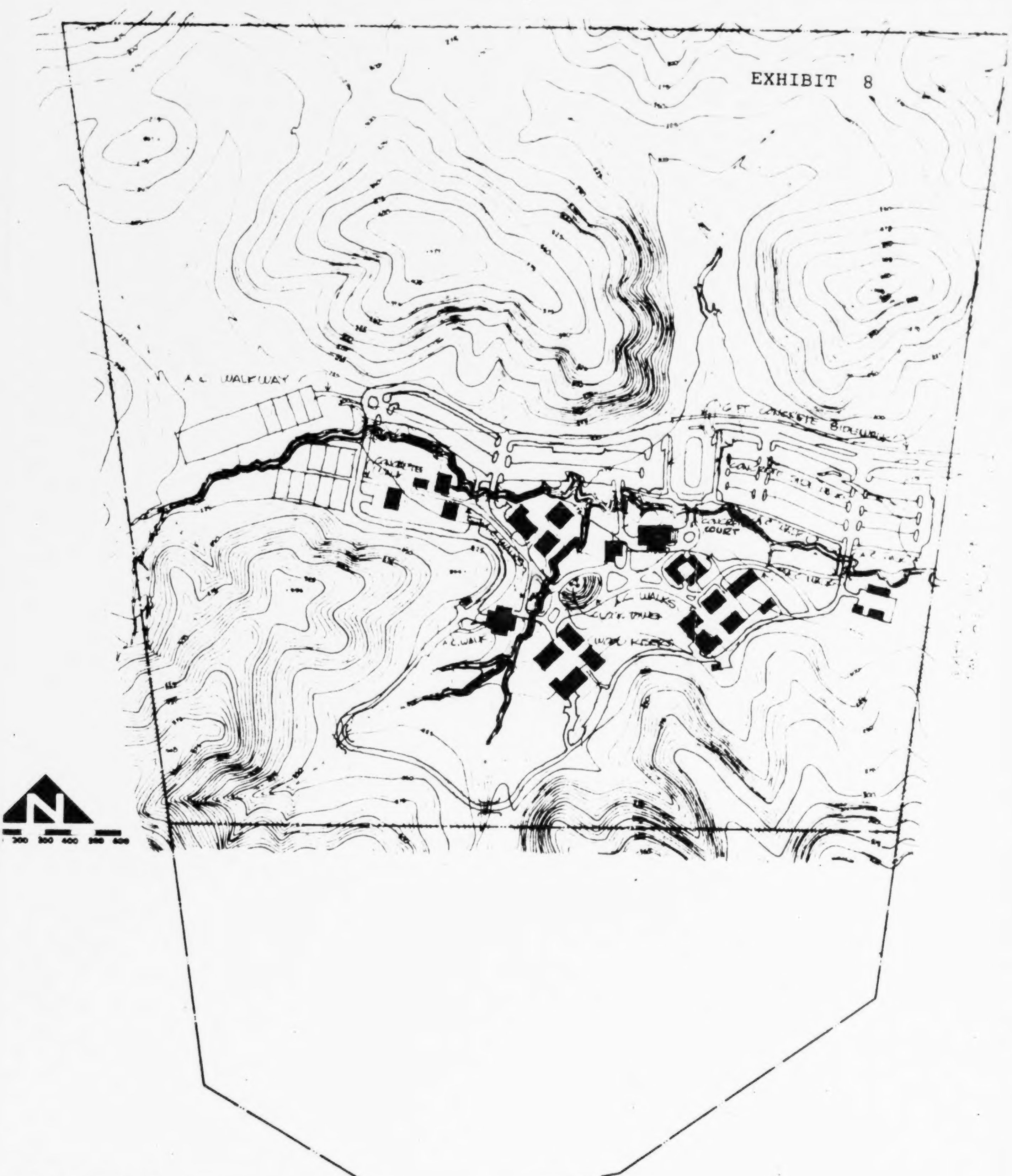
EXHIBIT 7





"Typical views of the drainage ditch ..."

EXHIBIT 8


A.C. WALKWAY
6 FT CONCRETE BIKEWALK
CONCRETE WALK
CONCRETE COURT
A.C. WALKS
CLOCK TOWER
A.C. WALK
N
300 350 400 500 600

E DEVELOPMENT — 1973

AMPUS WALKWAYS, COURTS, AND CLOCK

ICE OF COMMUNITY COLLEGE PLANNING CALIFORNIA DEPARTMENT OF EDUCATIO

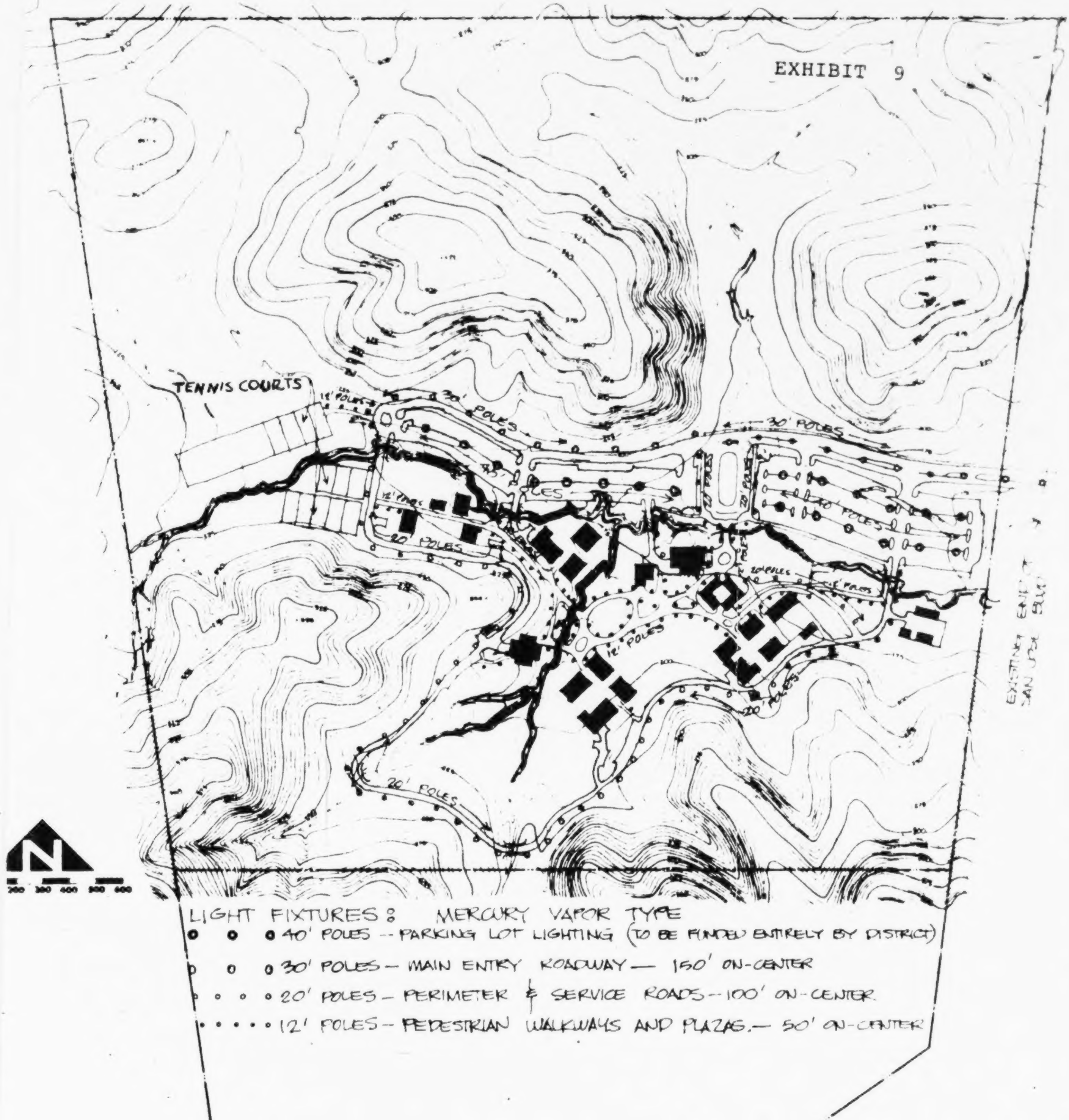
E 23 DEC, 1971 JOB NO. 710133 DRAWN CHECKED SHEET 1 OF 1 SHEET

DIAN VALLEY COLLEGES
RIN COMMUNITY COLLEGE DISTRICT
VATO CALIFORNIA

1-A 2-A 3-A

NEPTUNE & THOMAS ASSOCIATE
Architects-Engineer

EXHIBIT 9


TENNIS COURTS
12' POLES
30' POLES
30' POLES
12' POLES
20' POLES
40' POLES
20' POLES
12' POLES
20' POLES
20' POLES
20' POLES
EXISTING ENTRY SAN JOSE BLVD
N
200 300 400 500 600

LIGHT FIXTURES: MERCURY VAPOR TYPE

● ● ● 40' POLES -- PARKING LOT LIGHTING (TO BE FUNDED ENTIRELY BY DISTRICT)

○ ○ ○ 30' POLES — MAIN ENTRY ROADWAY — 150' ON-CENTER

∘ ∘ ∘ ∘ 20' POLES — PERIMETER & SERVICE ROADS -- 100' ON-CENTER

• • • • • 12' POLES — PEDESTRIAN WALKWAYS AND PLAZAS. — 50' ON-CENTER

E DEVELOPMENT — 1973

AMPUS LIGHTING

ICE OF COMMUNITY COLLEGE PLANNING — CALIFORNIA DEPARTMENT OF EDUCATIO

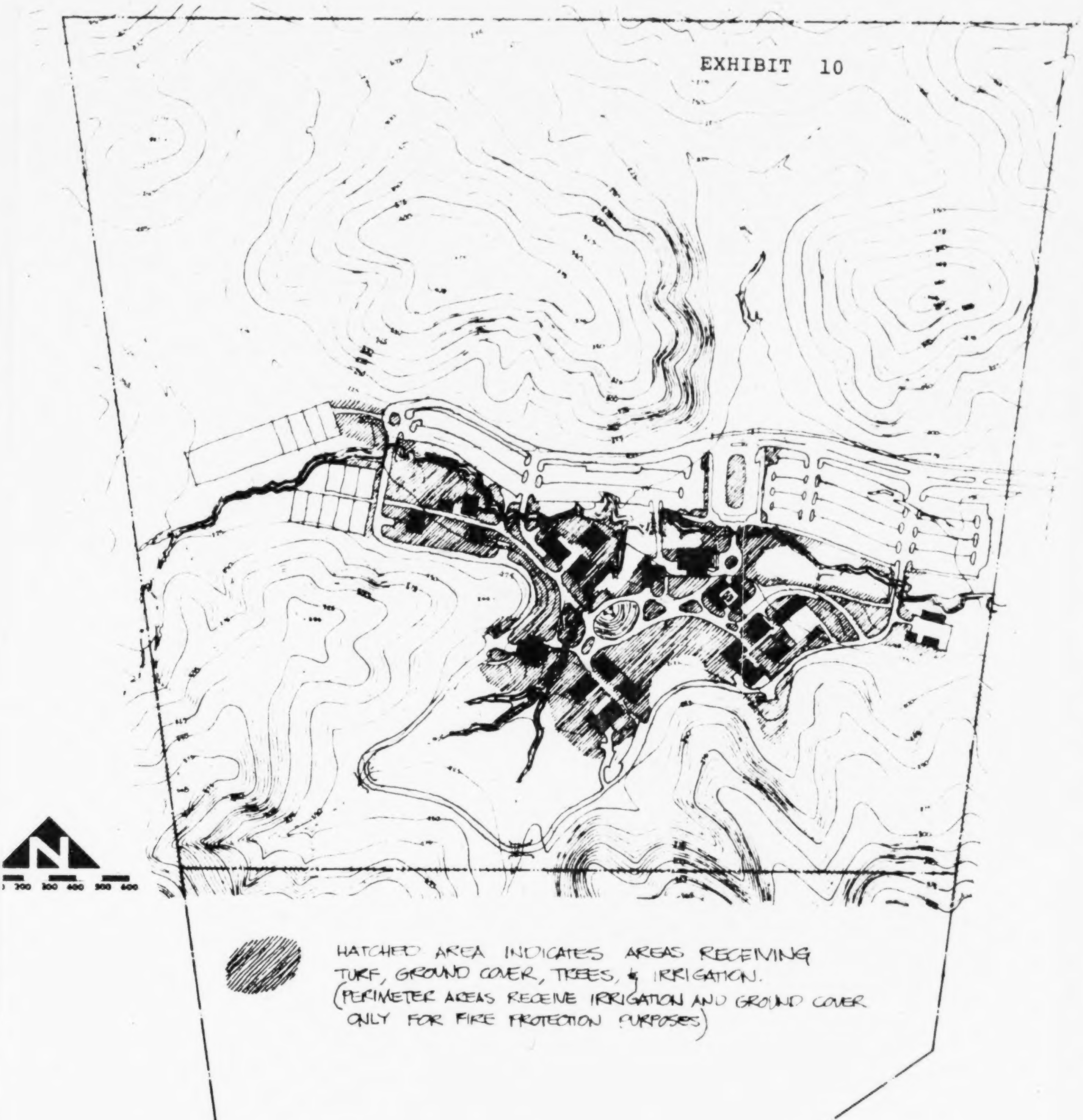
E 23 DEC, 1971 JOB NO. 71013 DRAWN JGS CHECKED JFT SHEET 2 OF 4 SHEET

DIAN VALLEY COLLEGES
RIN COMMUNITY COLLEGE DISTRICT
CALIFORNIA

1-A 2-A 3-A

NEPTUNE & THOMAS ASSOCIATE
Architects-Engineer

EXHIBIT 10



▨ HATCHED AREA INDICATES AREAS RECEIVING TURF, GROUND COVER, TREES, & IRRIGATION. (PERIMETER AREAS RECEIVE IRRIGATION AND GROUND COVER ONLY FOR FIRE PROTECTION PURPOSES)

E DEVELOPMENT – 1973

AMPUS LANDSCAPING AND IRRIGATION

ICE OF COMMUNITY COLLEGE PLANNING — CALIFORNIA DEPARTMENT OF EDUCATIC

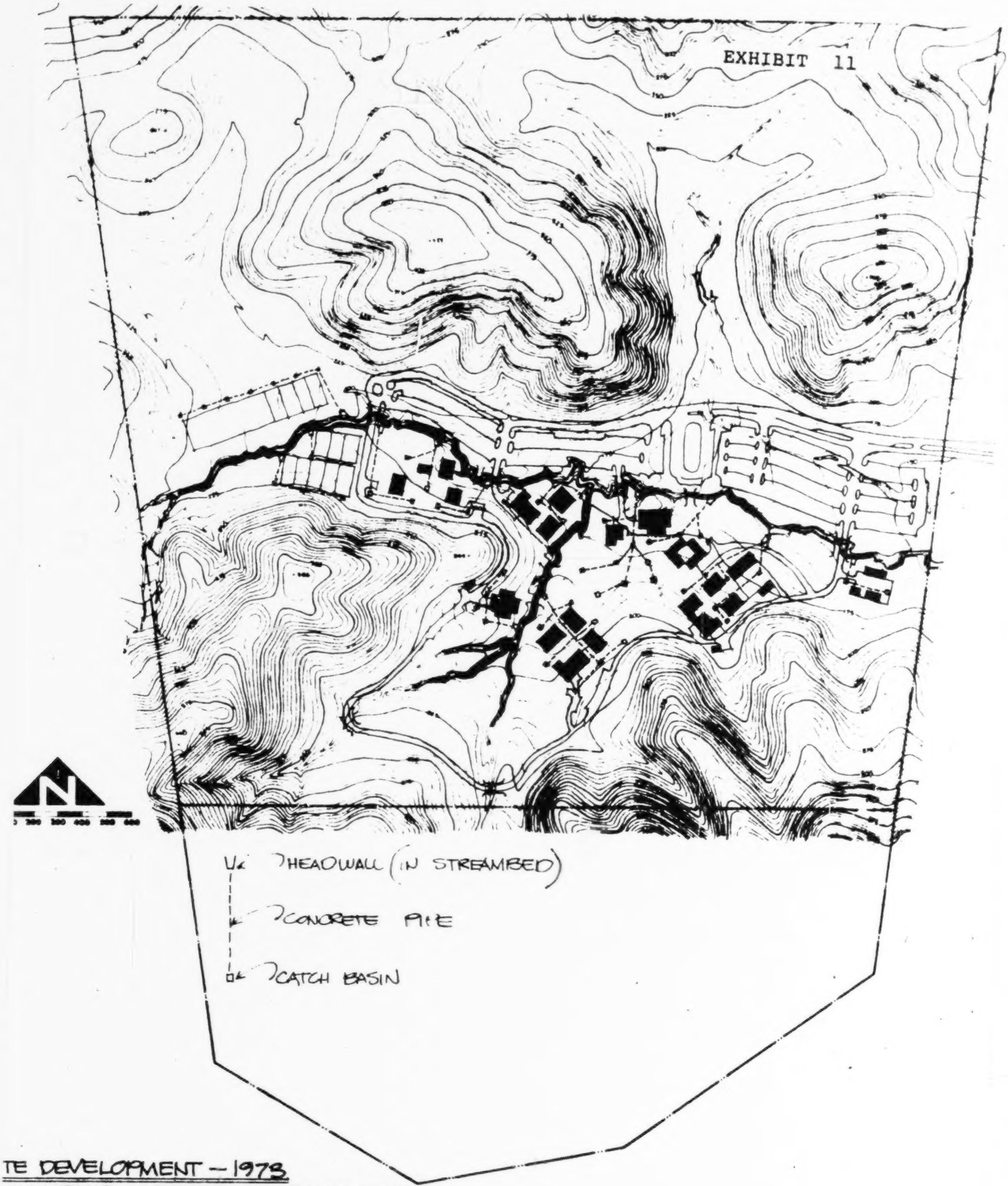
E 23 DEC, 1971 JOB NO. 71013 DRAWN J.G.S CHECKED J.F.T. SHEET 3 OF 4 SHEE

DIAN VALLEY COLLEGES
ARIN COMMUNITY COLLEGE DISTRICT
VATO CALIFORNIA

1-A 2-A 3-A

NEPTUNE & THOMAS ASSOCIATE
Architects-Enginee

EXHIBIT 11


N
0 100 200 300 400 500 600
HEADWALL (IN STREAMBED)
CONCRETE PIPE
CATCH BASIN

TE DEVELOPMENT – 1973

AMPUS STORM DRAINAGE

FICE OF COMMUNITY COLLEGE PLANNING   CALIFORNIA DEPARTMENT OF EDUCATI

TE 23 DEC., 1971   JOB NO. 71013   DRAWN J.G.S.   CHECKED J.F.T   SHEET 4 OF 4 SHEE

IDIAN VALLEY COLLEGES
ARIN COMMUNITY COLLEGE DISTRICT
VATO   CALIFORNIA

1-A   2-A   3-A

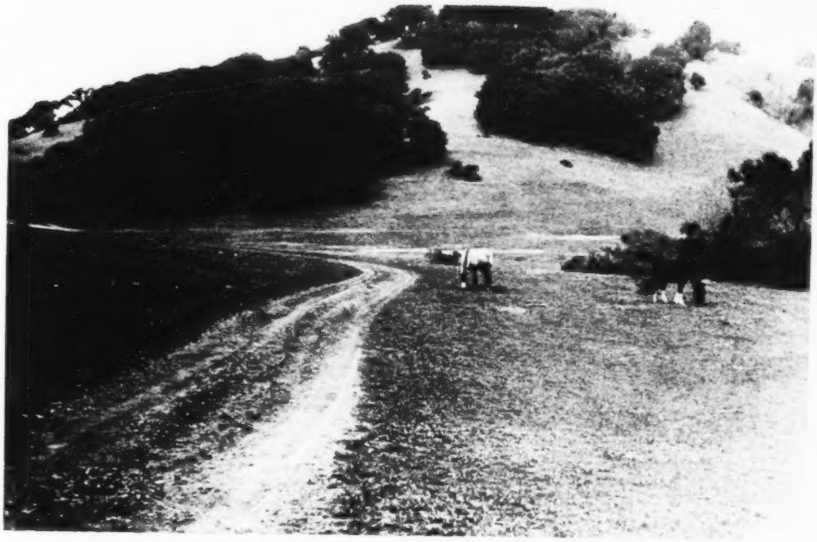
NEPTUNE & THOMAS ASSOCIATE
Architects-Enginee

EXHIBIT 12

"... the general locations of the parking area."

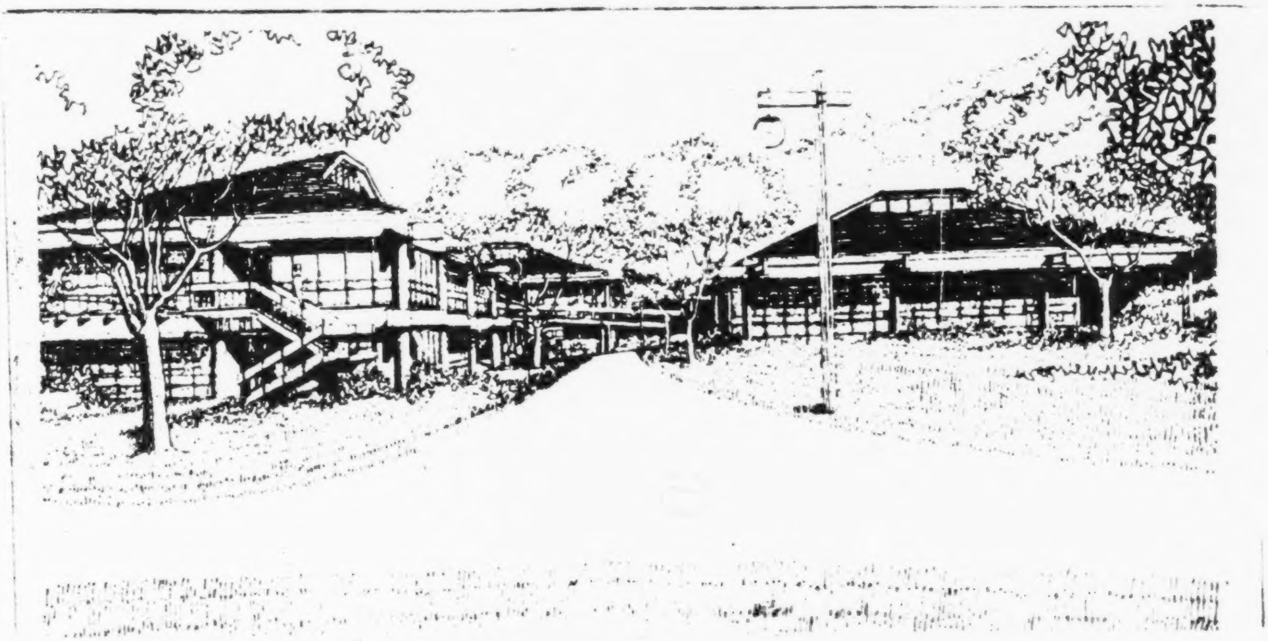
Site of the Corporation Yard

EXHIBIT 13

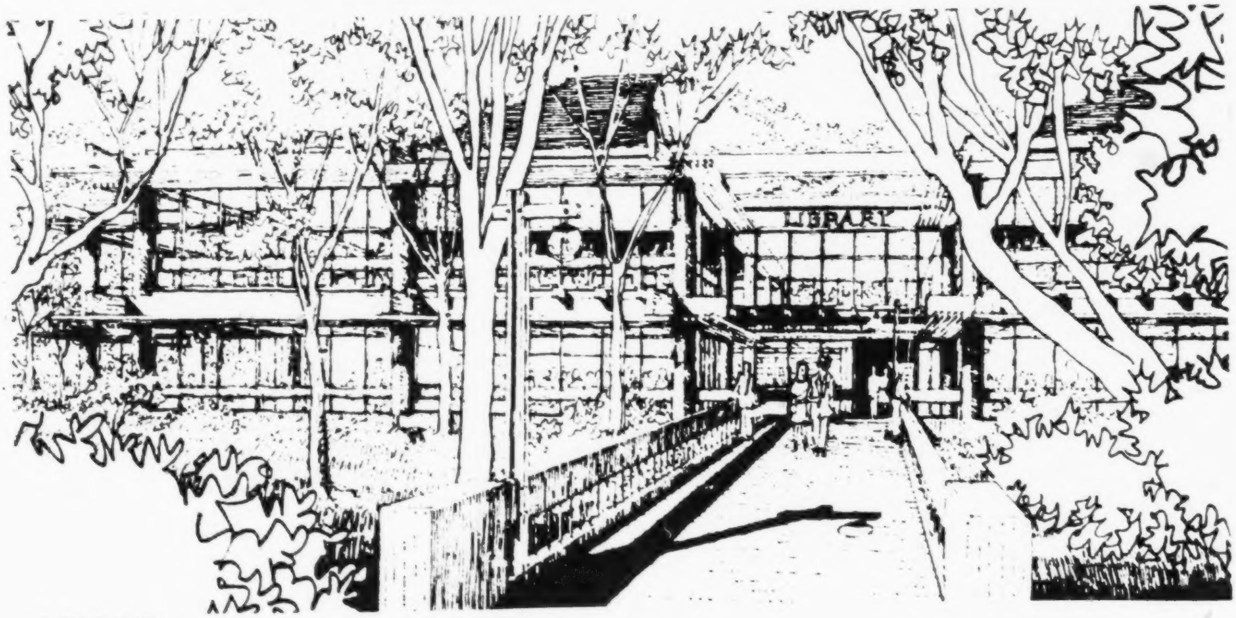


"... shows the nature of the area in which (parking)expansion will take place."

EXHIBIT 14

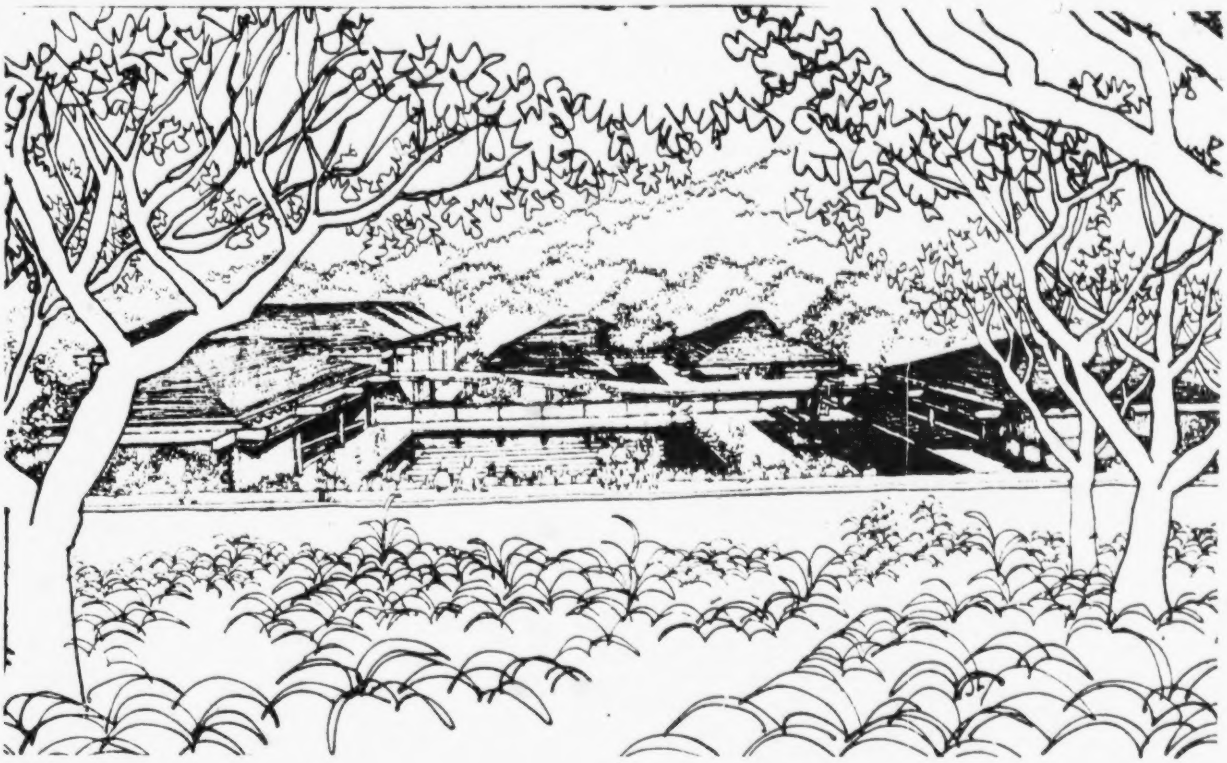


COLLEGE C

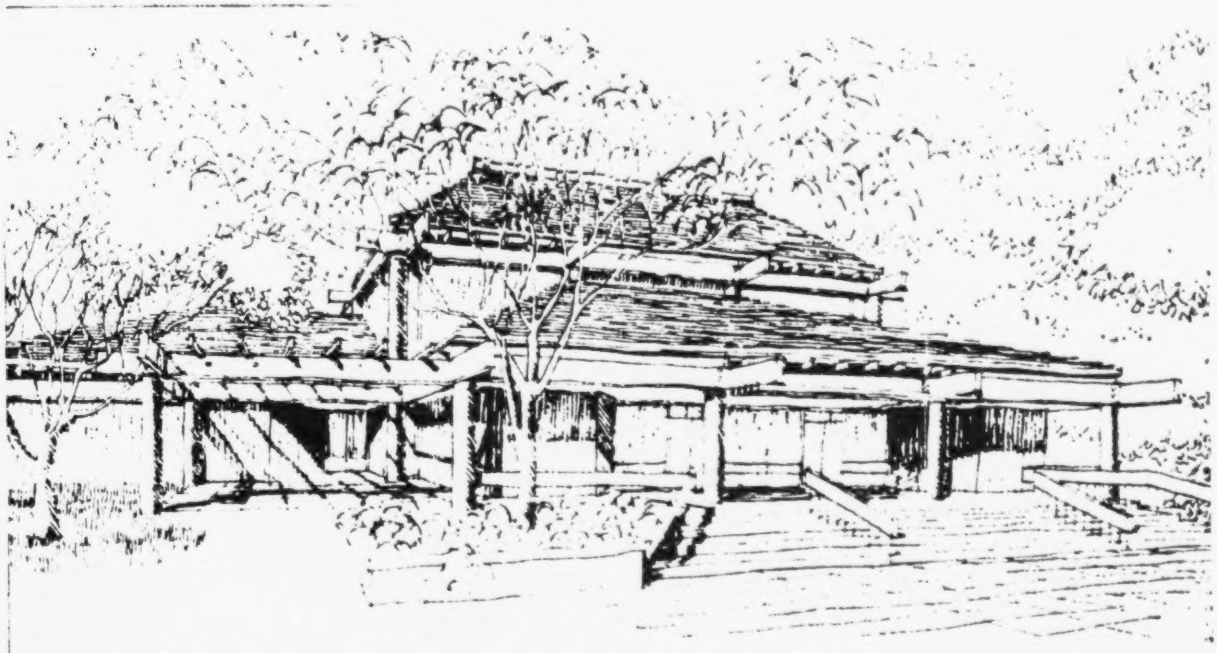


LIBRARY

EXHIBIT 15



PHYSICAL EDUCATION



THEATER

EXHIBIT 16

SUMMARY OF ESTIMATED CONTRACT COSTS

FIRST PHASE OF CONSTRUCTION

Site Development - site grading, utilities, service road, parking lots, bridges, erosion protection

Estimated Cost $1,708,100.

Inner College A
Inner College B
Administration - Student Services
Bookstore (for Interim Library)
Power Plants
Corporation Yard
Tennis and hard surface courts

Estimated Cost $4,122,822.

SECOND PHASE OF CONSTRUCTION

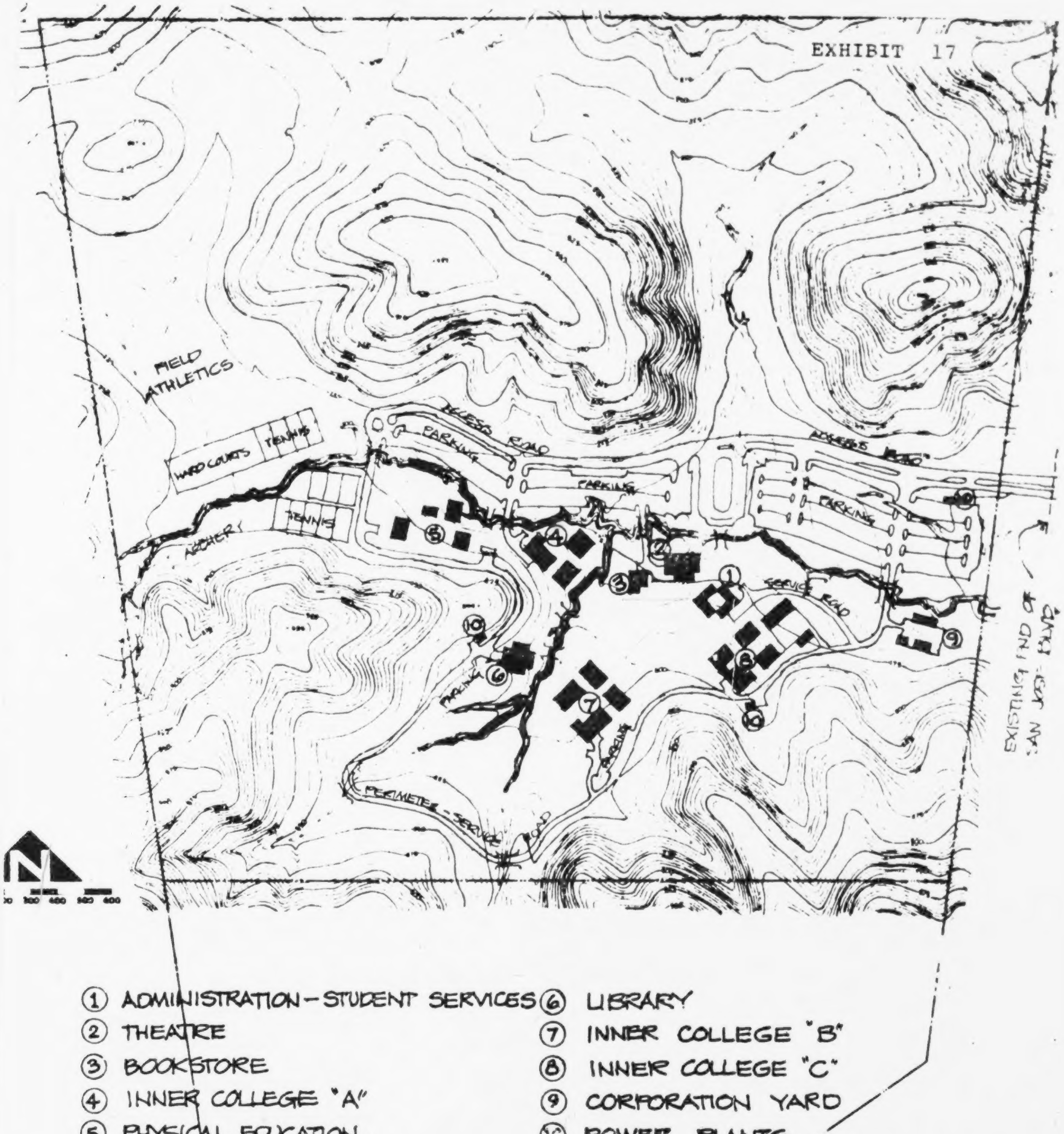
Site Development, 1973 - walks, lighting, landscaping, irrigation, storm drainage

Estimated Cost $ 542,630.

Inner College C
Library

Estimated Cost $2,688,000.

EXHIBIT 17


FIELD ATHLETICS
HARD COURTS
TENNIS
TENNIS
ARCHERY
ACCESS ROAD
PARKING
PARKING
ACCESS ROAD
PARKING
SERVICE ROAD
PARKING
PARKING
PERIMETER SERVICE ROAD
EXISTING END OF SAN JOSE BLVD.
N
100 200 400 500 600

① ADMINISTRATION - STUDENT SERVICES
② THEATRE
③ BOOKSTORE
④ INNER COLLEGE "A"
⑤ PHYSICAL EDUCATION
⑥ LIBRARY
⑦ INNER COLLEGE "B"
⑧ INNER COLLEGE "C"
⑨ CORPORATION YARD
⑩ POWER PLANTS

E PLAN — INITIAL FACILITIES

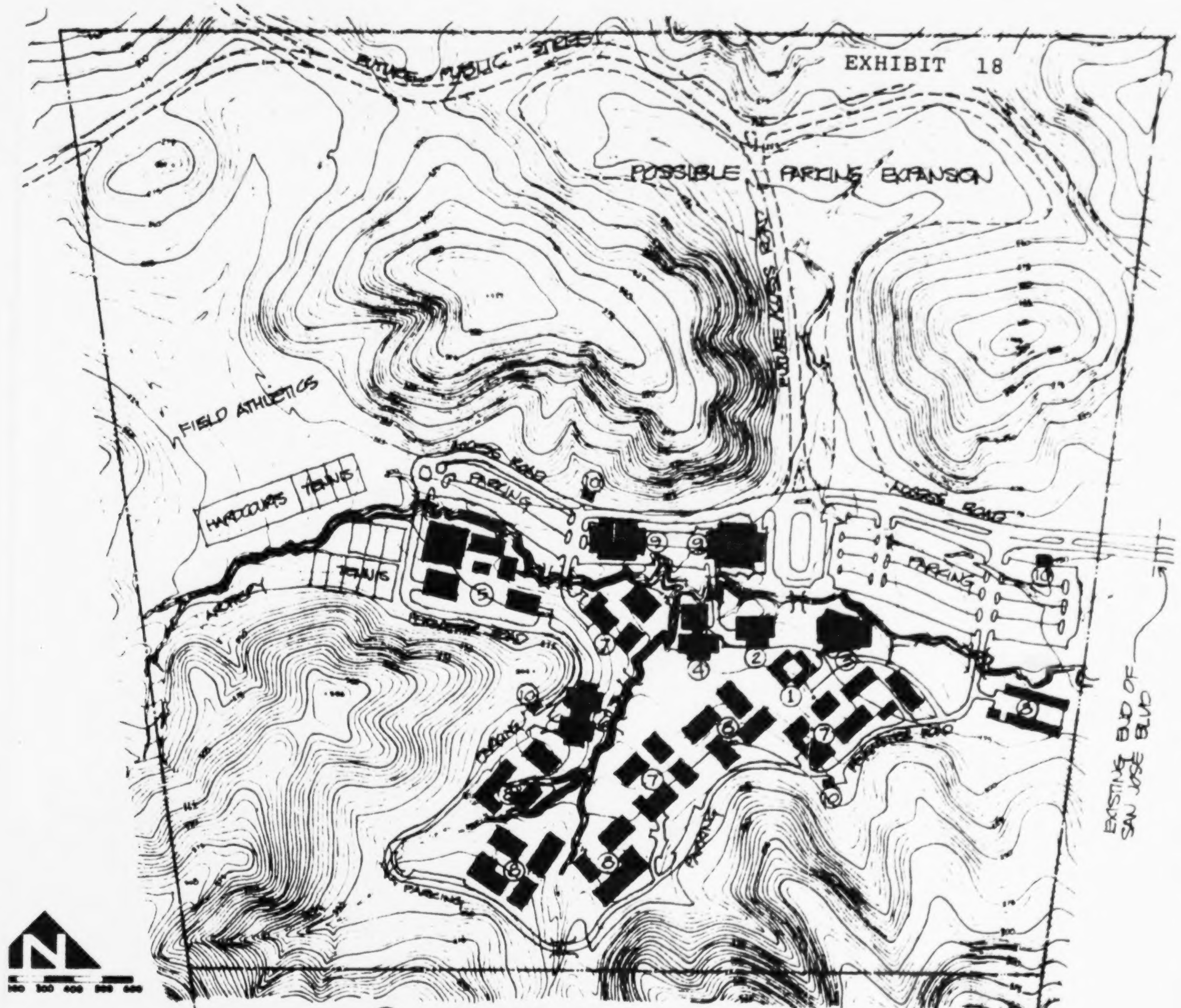
OF COMMUNITY COLLEGE PLANNING CALIFORNIA DEPARTMENT OF EDUCATIO

23 DEC, 1971 JOB NO. 68021 DRAWN J.G.S. CHECKED J.F.T. SHEET OF SHEET

IAN VALLEY COLLEGES
IN COMMUNITY COLLEGE DISTRICT

NEPTUNE & THOMAS ASSOCIATE
Architects-Engin

EXHIBIT 18


FUTURE PUBLIC STREET
POSSIBLE PARKING EXPANSION
FUTURE ACCESS ROAD
FIELD ATHLETICS
ACCESS ROAD
PARKING
HARDCOURTS
TENNIS
TENNIS
ACCESS ROAD
PARKING
SERVICE ROAD
PARKING
PARKING
EXISTING END OF SAN JOSE BLVD
1
2
3
4
5
6
7
8
9
10
N
100 200 400 600 800

① ADMINISTRATION-STUDENT SERVICES
② THEATRE
③ AUDITORIUM
④ BOOKSTORE - MEDIA CENTER
⑤ PHYSICAL EDUCATION COMPLEX
⑥ LIBRARY
⑦ INNER COLLEGES - (INITIAL FACILITIES)
⑧ INNER COLLEGES - (EXPANSION TO 5,000 STUDENTS)
⑨ HIGH-RISE (EXPANSION TO 10,000 STUDENTS)
⑩ POWER PLANTS

E PLAN — FACILITIES FOR 5000 STUDENTS (WITH EXPANSION TO 10,000)

CE OF COMMUNITY COLLEGE PLANNING | CALIFORNIA DEPARTMENT OF EDUCATION

20 APRIL, 1972 JOB NO. 68021 DRAWN J.G.S. CHECKED J.F.T. SHEET 1 OF 1 SHEETS

IAN VALLEY COLLEGES
IN COMMUNITY COLLEGE DISTRICT

1-A 2-A 3-A

NEPTUNE & THOMAS ASSOCIATES
Architects-Engineers

EXHIBIT 19

NEPTUNE & THOMAS ASSOCIATES

Architects-Engineers

February 10, 1972

Mr. Dale A. Fleming
Director of Planning
Marin Community College District
Kentfield, California 94904

Subject: Indian Valley Colleges

Dear Mr. Fleming:

Following is the procedure used in arriving at the approximate 4% increase in run-off that will be carried by the stream at the extreme east end of the site:

The report on "Initial Studies of Flood Control, Geology and Soil Engineering" prepared by Cooper-Clark & Associates states that the campus is to occupy approximately 330 acres (actually 333) of land and that approximately 400 acres of surrounding land drains to the north branch of Arroyo San Jose Creek.

We have estimated the following areas for contemplated cover of the site:

Roads	5.6 Acres
Walks	4.9 "
Parking (for approximately 1000 cars)	9.1 "
Hard Courts	2.9 "
Buildings & Patios (for College to 5000)	7.3 "
	29.8 Acres

$$\frac{29.8 \text{ Acres}}{333 + 400 \text{ Acres}} = 4.06\%$$

This percentage assumes that all of the water falling upon the above surfaces would find its way to the stream bed.

The breakdown approximation for the 7.3 acres shown for Buildings and Patios is:

7 Inner Colleges @ 20,000 S.F.	140,000
7 Inner Colleges Patios @ 5,000 S.F.	35,000

EXHIBIT 19 (Cont'd)

NEPTUNE & THOMAS ASSOCIATES

Architects-Engineers

February 10, 1972

Mr. Dale A. Fleming
Indian Valley Colleges

Page two

Administration				9,000
Bookstore	To	2,200	4,000	
	To	5,000	+ 3,200	7,200
Library	To	2,200	10,000	
	To	5,000	+ 9,300	19,300
P. E.	To	2,200	19,000	
	To	5,000	+ 21,000	40,000
Corporation Yd.	To	2,200	5,500	
	To	5,000	+ 5,500	11,000
Auditorium				30,000
Misc.	To	2,200	1,000	
	To	5,000	1,000	2,000
Patios (other than I.C.S.)	To	2,200	12,500	
	To	5,000	10,000	22,500
			Total	316,000

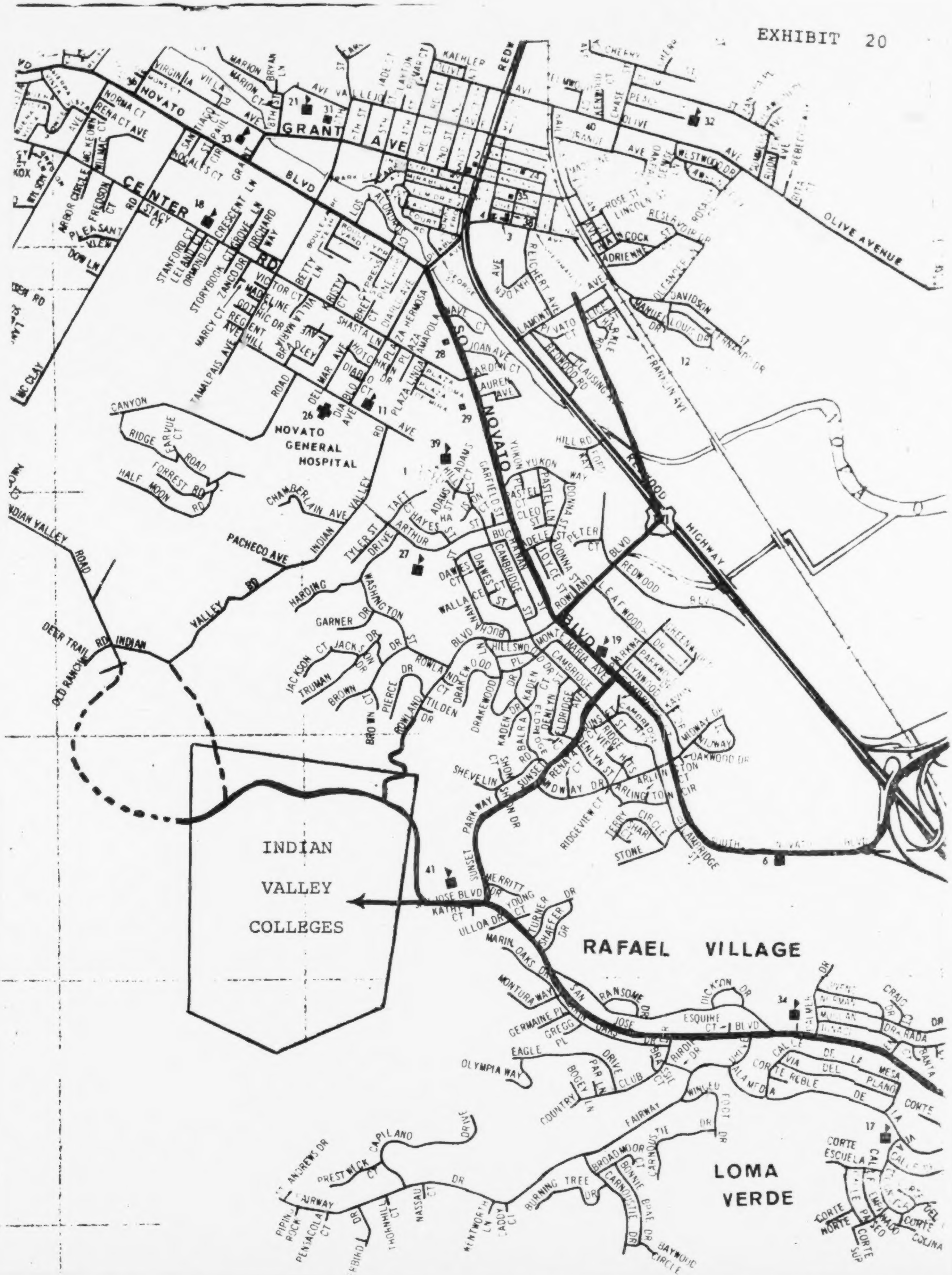
Please let us know if you need additional information.

Very truly yours,

Joseph F. Thomas, FAIA
Architect

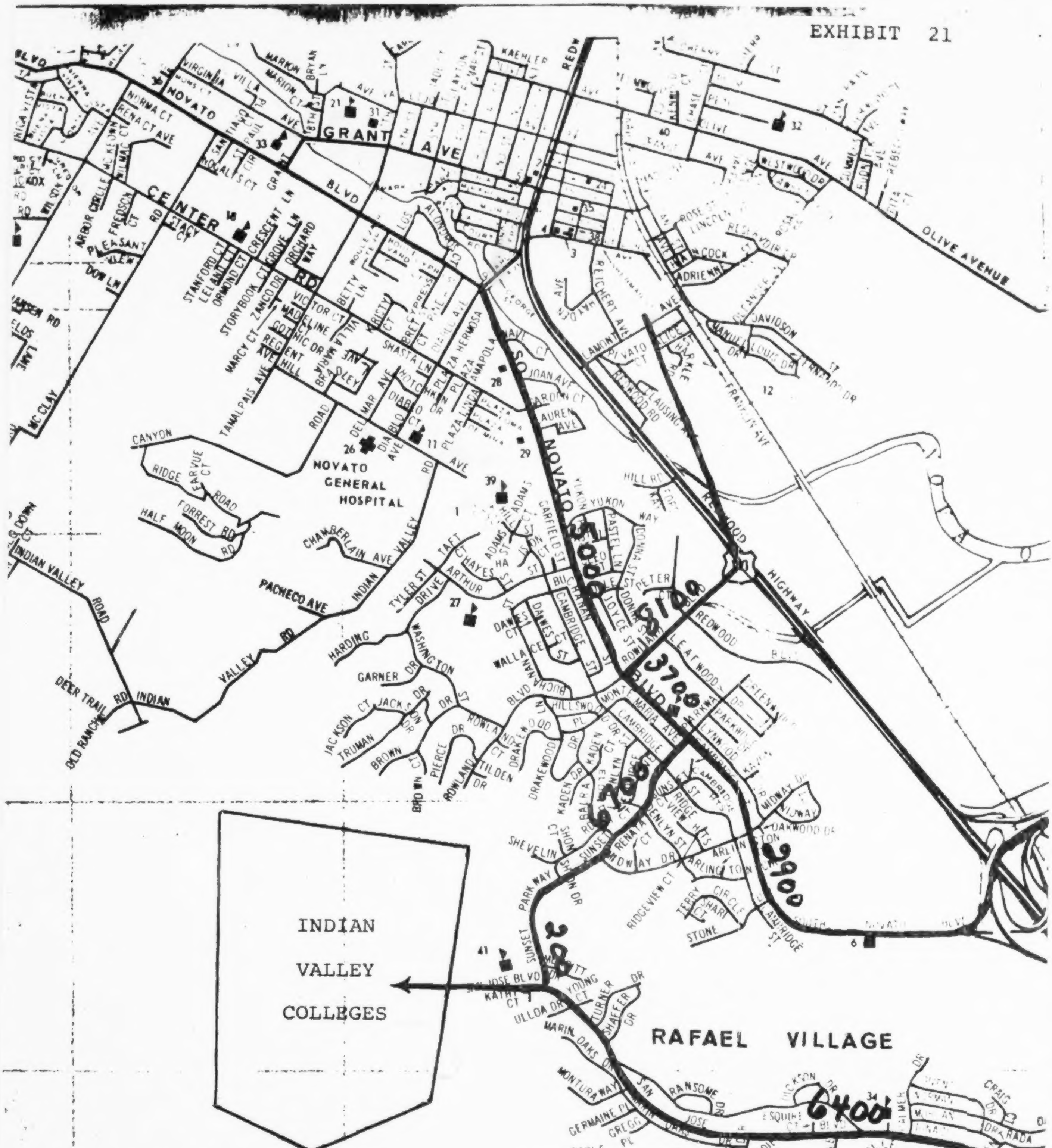
JFT:pg

EXHIBIT 20



INDIAN VALLEY COLLEGES
RAFAEL VILLAGE
LOMA VERDE
NOVATO GENERAL HOSPITAL
GRANT AVE
NOVATO BLVD
CENTER RD
SO. NOVATO BLVD
REDWOOD HIGHWAY
REDWOOD BLVD
OLIVE AVENUE
INDIAN VALLEY ROAD
PACHECO AVE
SAN JOSE BLVD
IGNACIO BLVD

EXHIBIT 21

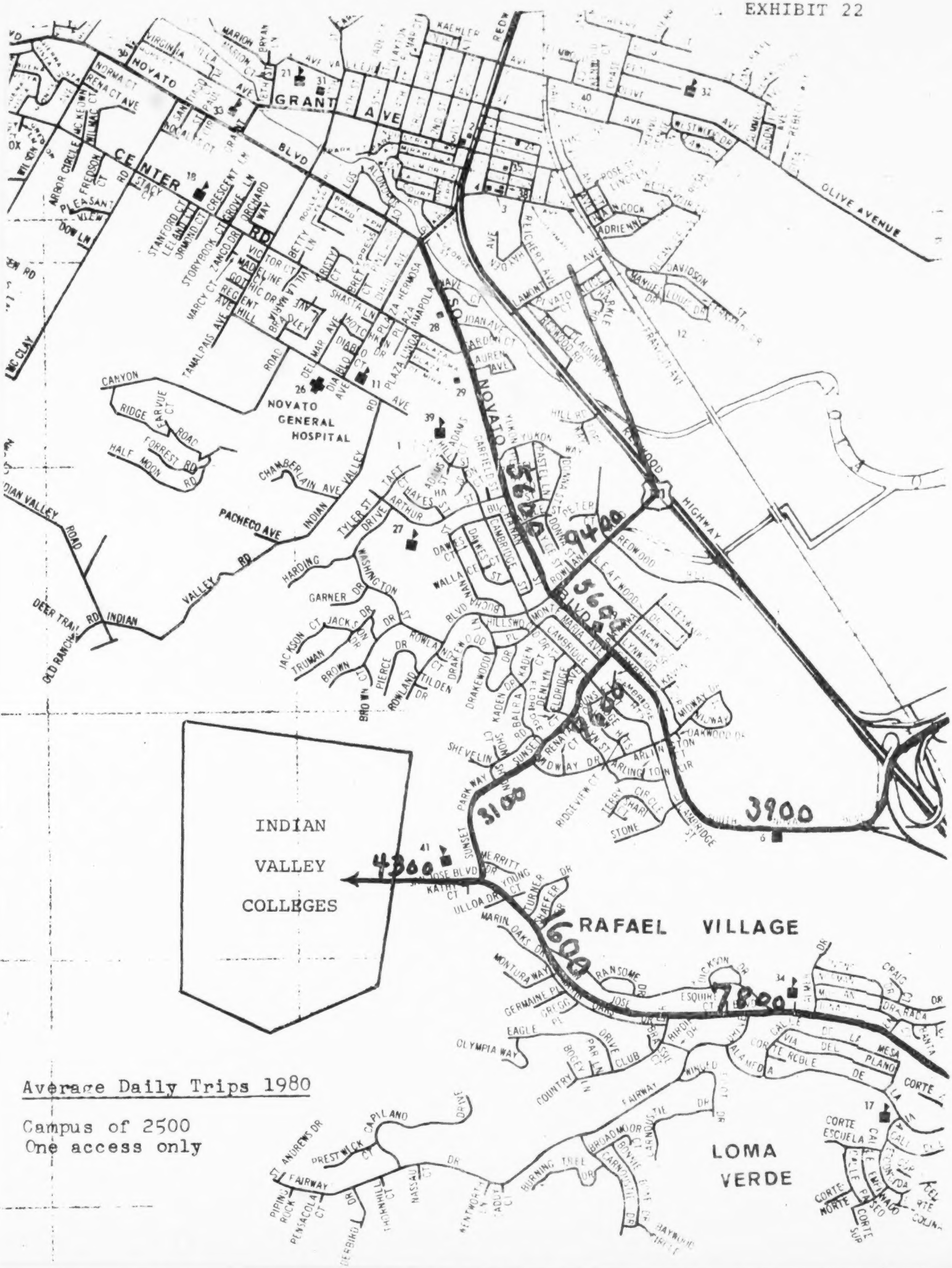


NOVATO GENERAL HOSPITAL
INDIAN VALLEY COLLEGES
RAFAEL VILLAGE
LOMA VERDE
GRANT AVE
NOVATO BLVD
CENTER RD
OLIVE AVENUE
REDWOOD HIGHWAY
INDIAN VALLEY ROAD
PACHECO AVE
SO NOVATO BLVD
SAN JOSE BLVD
5000
8100
3700
2700
2900
200
6400

Average Daily Trips 1980

No campus traffic

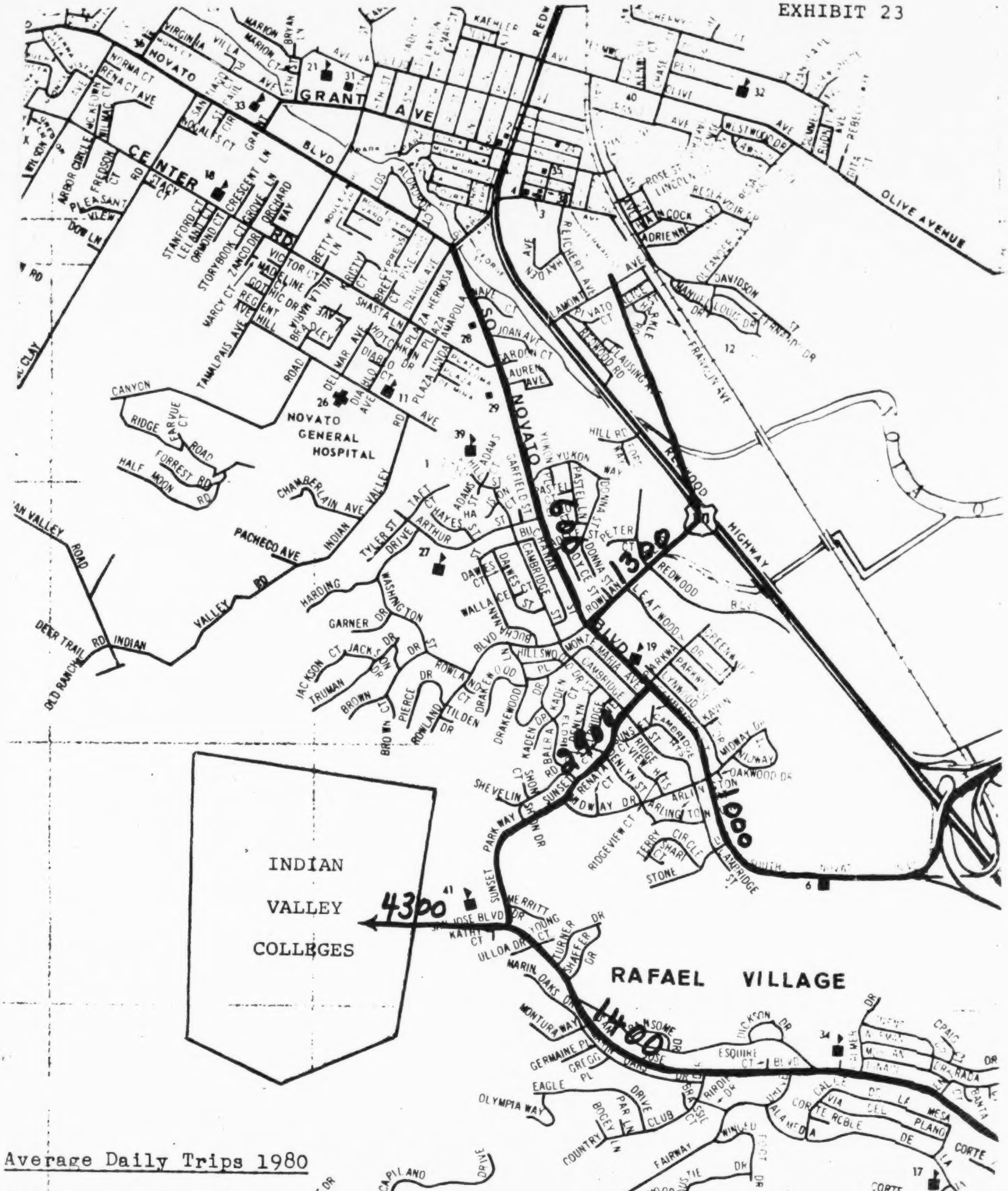
EXHIBIT 22


GRANT AVE
NOVATO BLVD
CENTER RD
OLIVE AVENUE
REDWOOD HIGHWAY
NOVATO BLVD
NOVATO GENERAL HOSPITAL
INDIAN VALLEY RD
PACHECO AVE
CANYON RIDGE ROAD
HALF MOON RD
CHAMBERLAIN AVE
INDIAN VALLEY COLLEGES
RAFAEL VILLAGE
LOMA VERDE
SAN JOSE BLVD
SUNSET PARK WAY
ARTHUR DRIVE
TYLER ST
WASHINGTON ST
FAIRWAY
CAPILANO DRIVE
5600
9400
5600
7600
3100
3900
4300
1600
7800

Average Daily Trips 1980

Campus of 2500
One access only

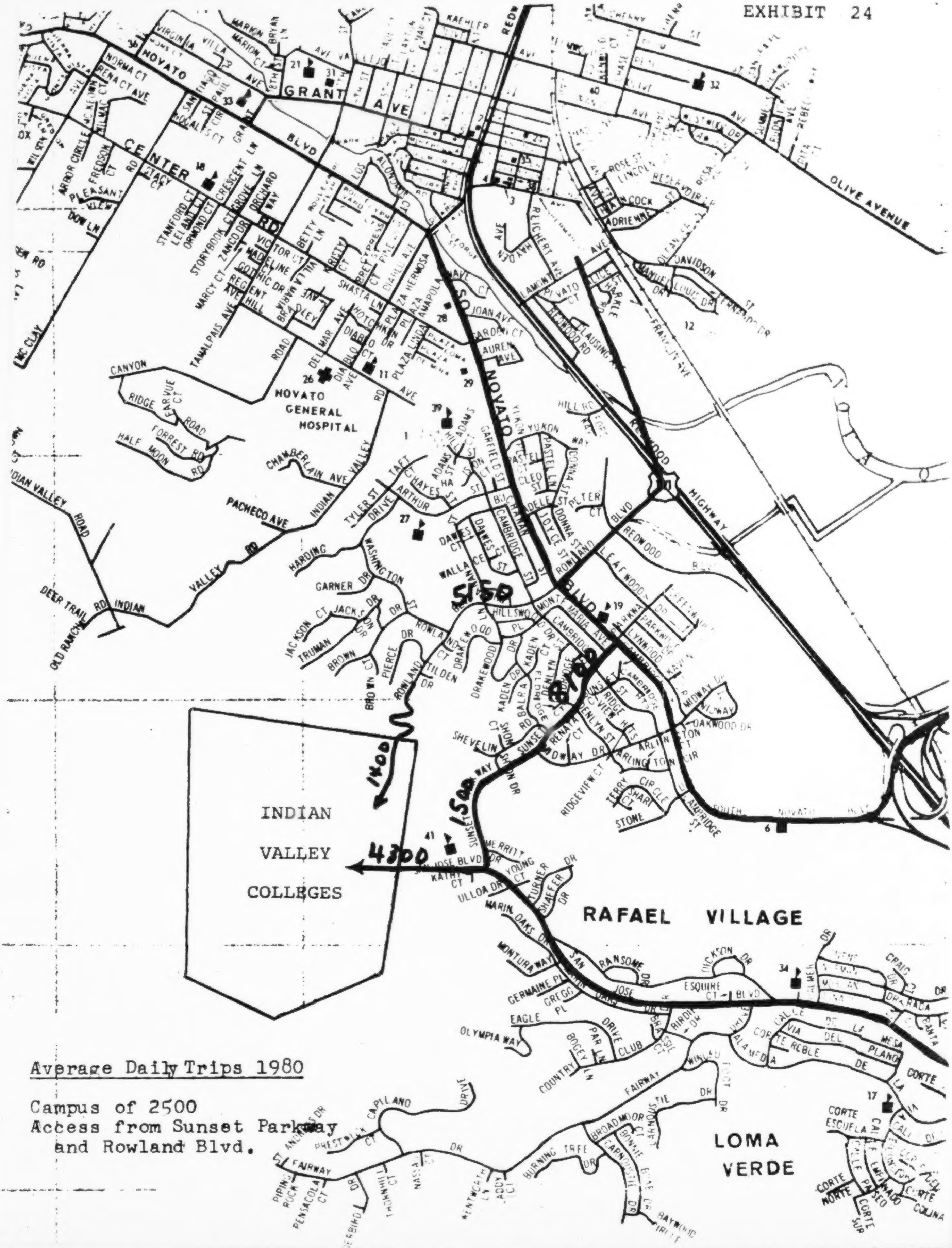
EXHIBIT 23


600
1300
2900
1000
4300
1400
INDIAN VALLEY COLLEGES
RAFAEL VILLAGE
LOMA VERDE
NOVATO GENERAL HOSPITAL
GRANT AVE
NOVATO BLVD
CENTER RD
OLIVE AVENUE
REDWOOD HIGHWAY
SO NOVATO BLVD
INDIAN VALLEY RD
SUNSET PARKWAY
SAN JOSE BLVD
ESQUIRE BLVD
RANSOME DR
MARIN OAKS DR
HILL RD
TAMALPAIS AVE
DIABLO AVE
PACHECO AVE
CANYON RIDGE
HALF MOON
PLAZA HERMOSA
ROWLAND BLVD
CAMBRIDGE ST
ARLINGTON
MIDWAY DR
OAKWOOD DR
RIDGEVIEW CT
TERRY CIRCLE
STONE
CLUB DRIVE
FAIRWAY
CAPILANO DRIVE
BROADMOOR CT
BURNING TREE
CORTE ESCUELA
DEER TRAIL RD
OLD RANCH

Average Daily Trips 1980

Campus traffic only.
One access only.

EXHIBIT 24


INDIAN VALLEY COLLEGES
RAFAEL VILLAGE
LOMA VERDE
NOVATO GENERAL HOSPITAL
5150
8700
1400
1500
4300
NOVATO BLVD
GRANT AVE
REDWOOD HIGHWAY
SOUTH NOVATO BLVD
OLIVE AVENUE
SUNSET WAY
SAN JOSE BLVD
ROWLAND BLVD
INDIAN VALLEY ROAD
CENTER RD

Average Daily Trips 1980

Campus of 2500
Access from Sunset Parkway
and Rowland Blvd.

EXHIBIT 25

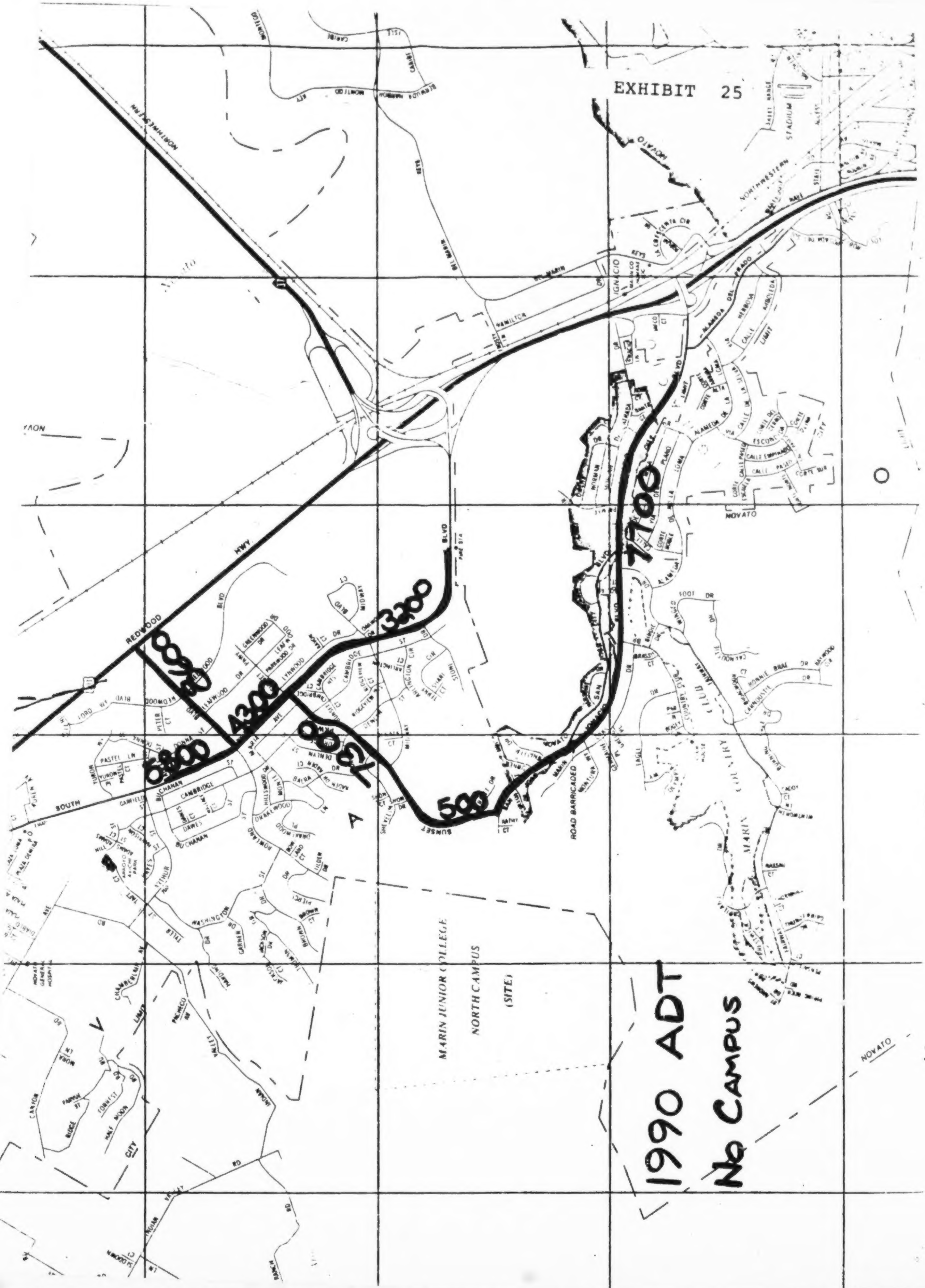
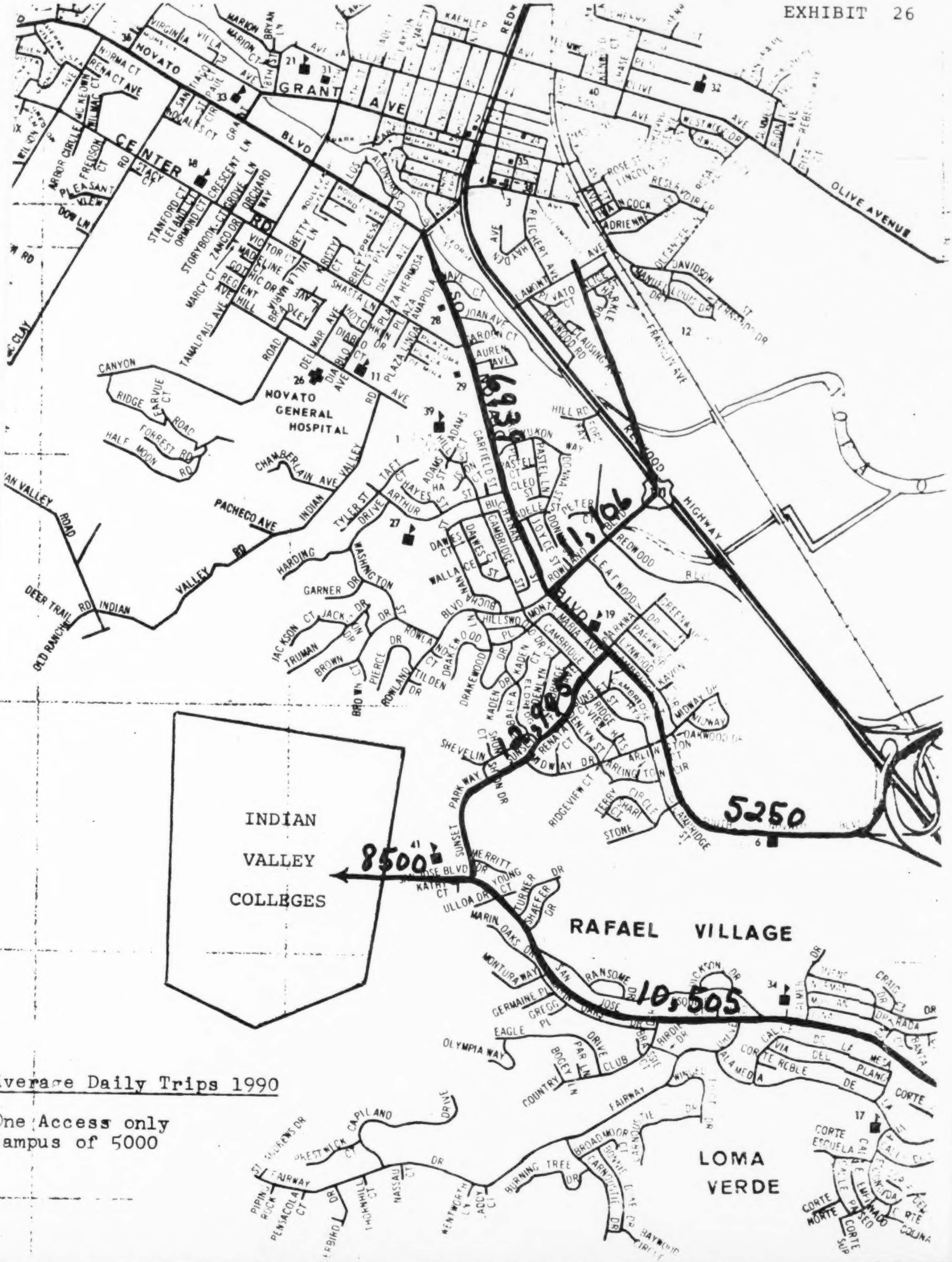

1990 ADT
No Campus
6800
4200
2600
3200
1300
500
7700
MARIN JUNIOR COLLEGE
NORTH CAMPUS
(SITE)
REDWOOD
HWY
NORTHWESTERN
IGNACIO
NOVATO
SOUTH
BUCHANAN
CAMBRIDGE
SUNSET
ROAD BARRICADED
MARIN COUNTRY CLUB
ALAMEDA DEL PRADO
HAMILTON
MIDWAY
CITY LIMIT
A

EXHIBIT 26

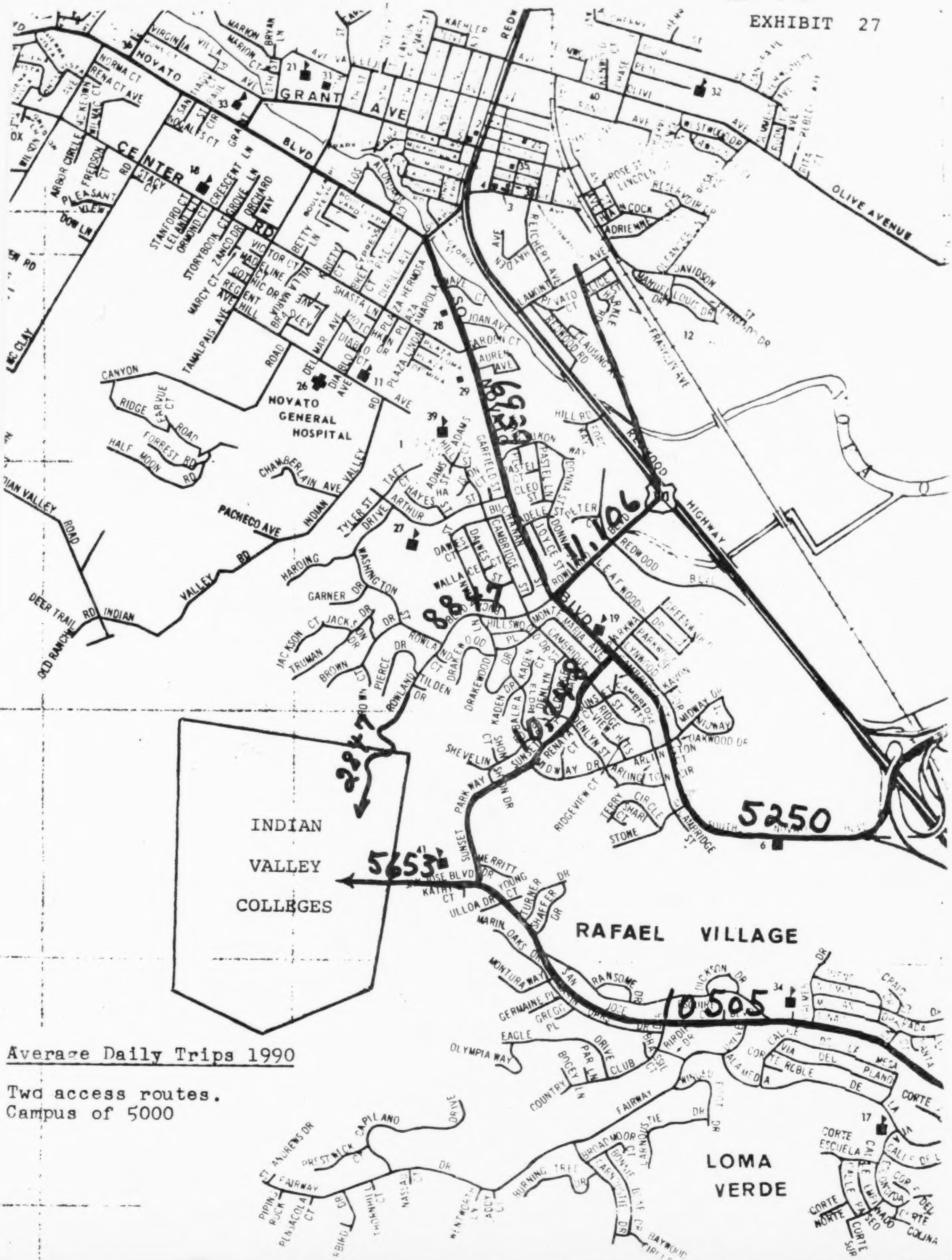


16,938
11,706
12,998
5250
8500
10,505
INDIAN VALLEY COLLEGES
RAFAEL VILLAGE
LOMA VERDE
NOVATO GENERAL HOSPITAL
GRANT AVE
NOVATO BLVD
OLIVE AVENUE
REDWOOD HIGHWAY

Average Daily Trips 1990

One Access only
Campus of 5000

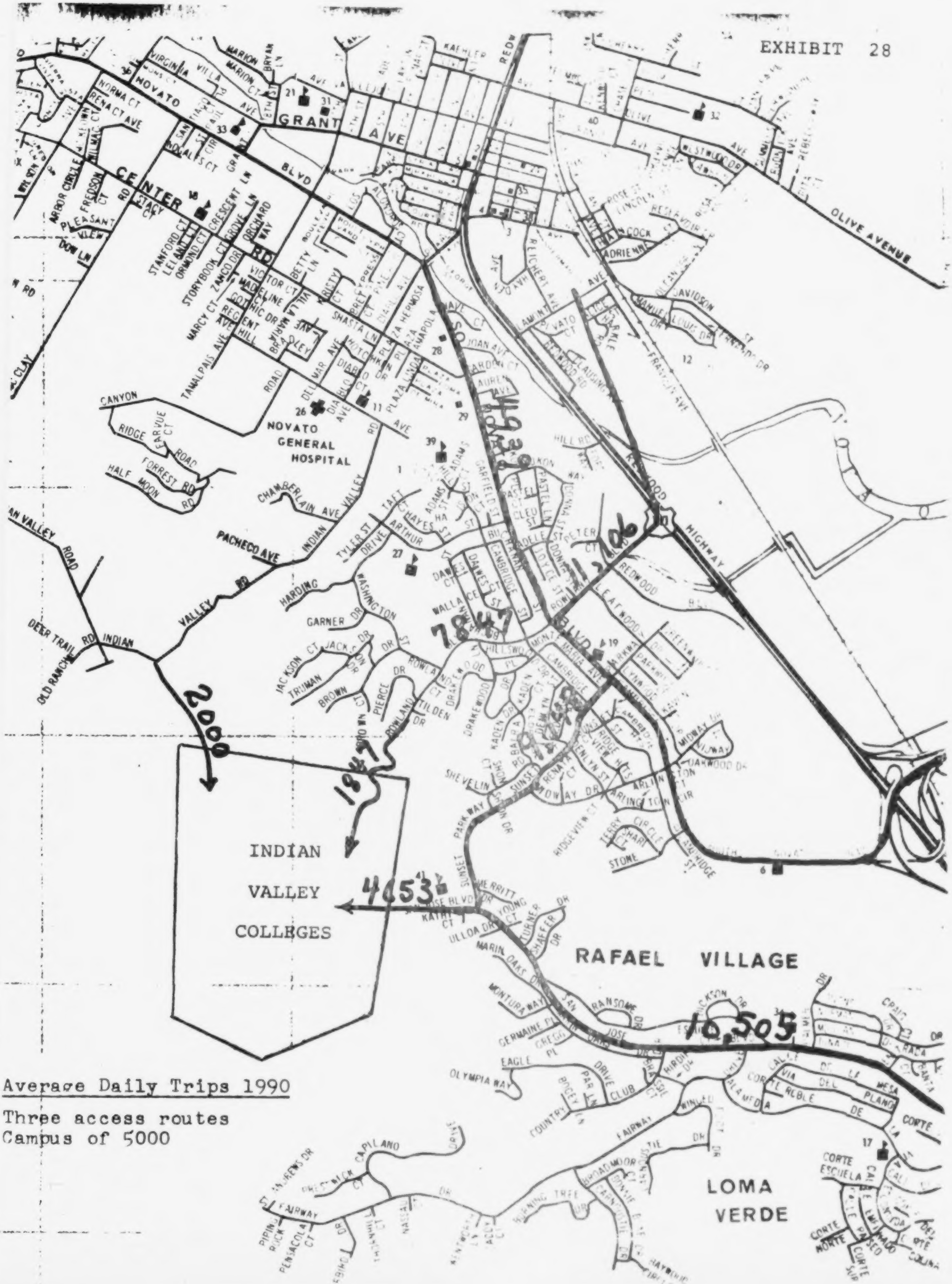
EXHIBIT 27


6933
11,706
8847
10,348
2847
5653
5250
10505
INDIAN VALLEY COLLEGES
NOVATO GENERAL HOSPITAL
RAFAEL VILLAGE
LOMA VERDE
GRANT AVE
NOVATO BLVD
OLIVE AVENUE
REDWOOD HIGHWAY
CENTER RD
INDIAN VALLEY RD
PACHECO AVE

Average Daily Trips 1990

Two access routes.
Campus of 5000

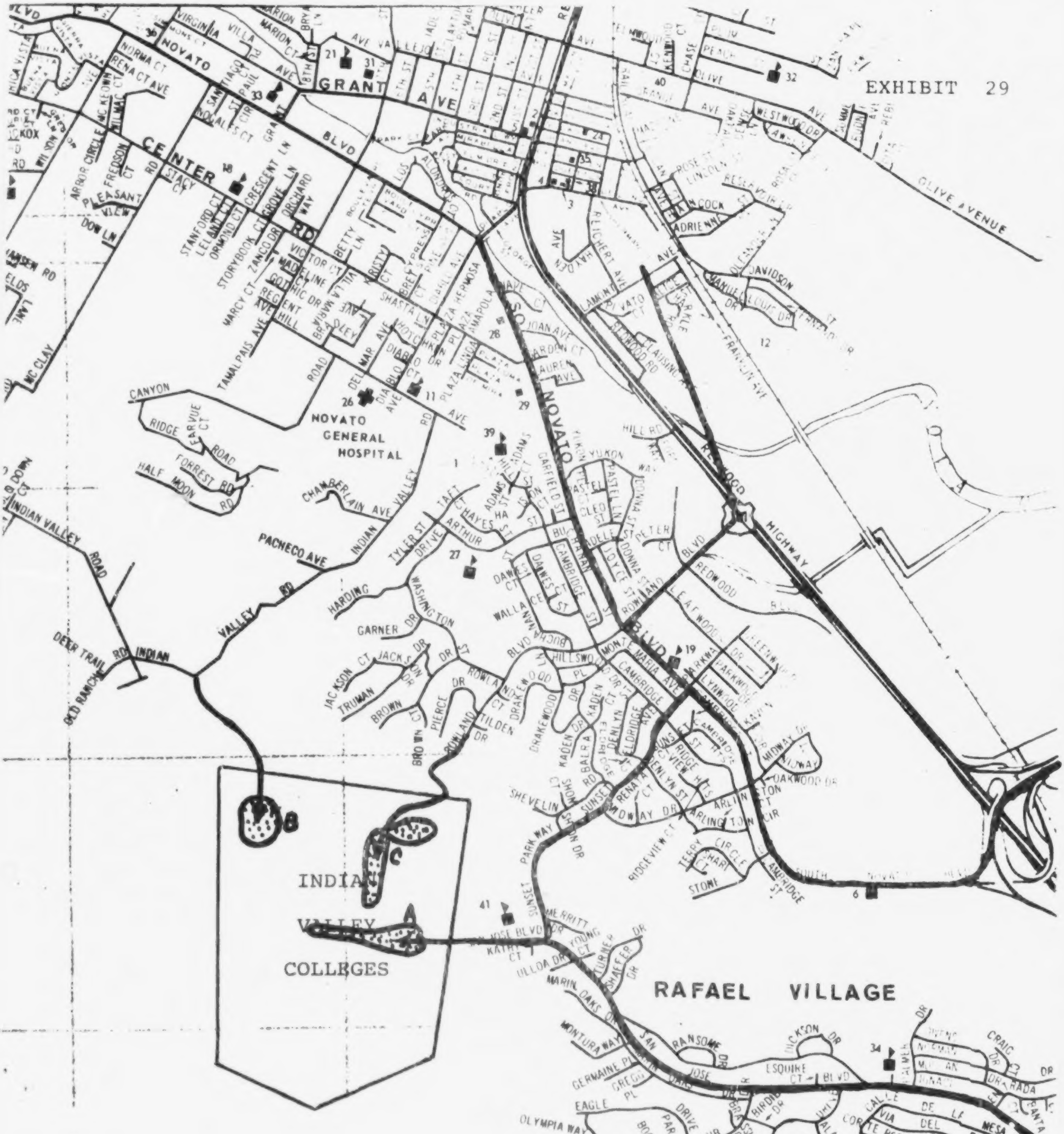
EXHIBIT 28


NOVATO
GRANT AVE
CENTER RD
BLVD
OLIVE AVENUE
NOVATO GENERAL HOSPITAL
INDIAN VALLEY RD
PACHECO AVE
REDWOOD HIGHWAY
INDIAN VALLEY COLLEGES
RAFAEL VILLAGE
LOMA VERDE
2000
1847
4653
7847
11,706
16,505

Average Daily Trips 1990

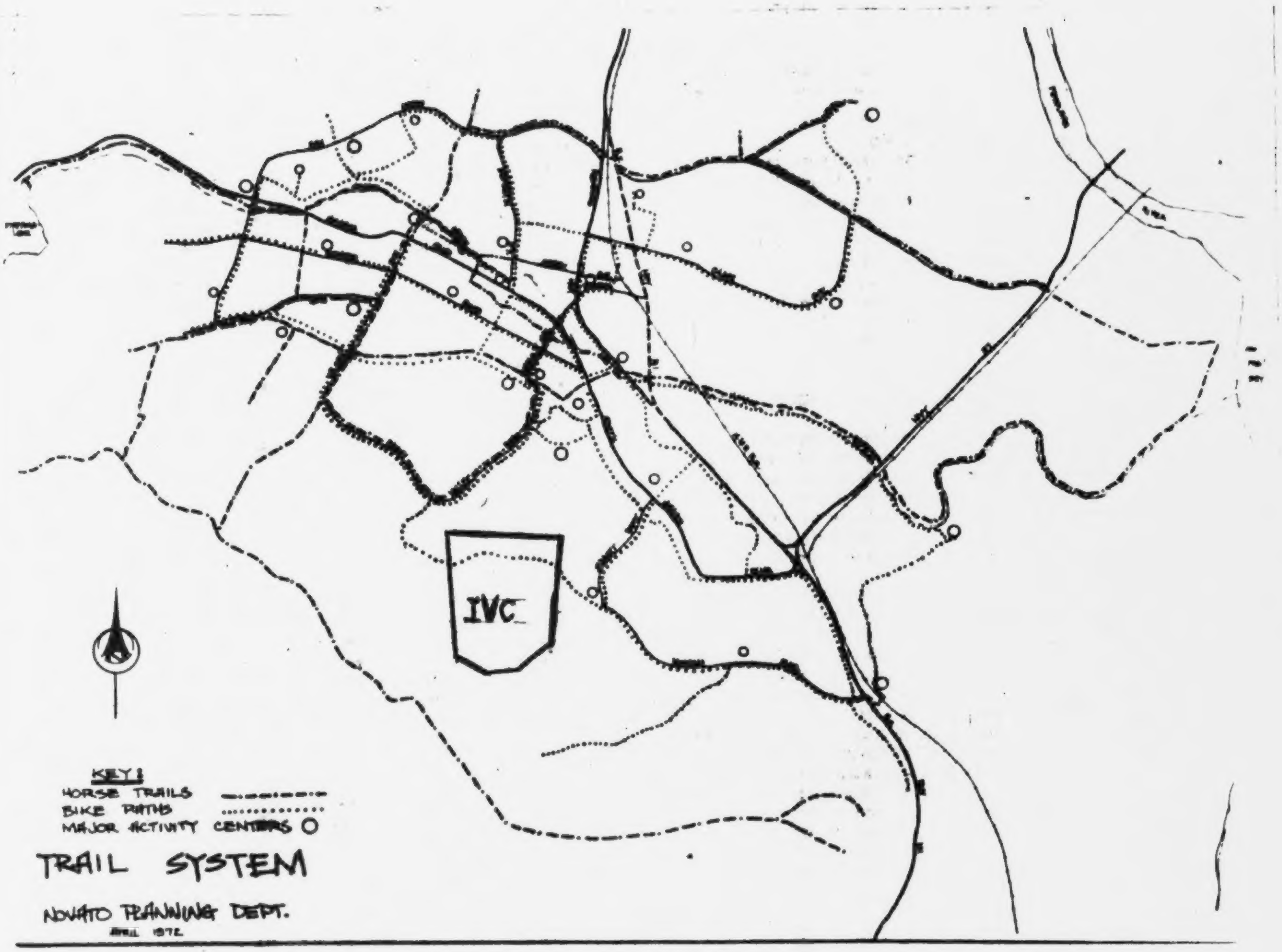
Three access routes
Campus of 5000

EXHIBIT 29


NOVATO
GRANT AVE
CENTER RD
BLVD
NOVATO GENERAL HOSPITAL
INDIAN VALLEY ROAD
PACHECO AVE
REDWOOD HIGHWAY
OLIVE AVENUE
SO. NOVATO BLVD
INDIAN VALLEY COLLEGES
A
B
C
RAFAEL VILLAGE
LOMA VERDE
SOUTH NOVATO BLVD
SAN JOSE BLVD
DIABLO AVE
CANYON RIDGE
HALF MOON
CHAMBERLAIN AVE
DEER TRAIL
OLD RANCH
HARDING
WASHINGTON
GARNER DR
JACKSON CT
TRUMAN
BROWN
PIERCE DR
TILDEN
DRAKEWOOD
CAMBRIDGE ST
ROWLAND BLVD
ARLINGTON CIR
SUNSET PARKWAY
MERRITT
ULLOA DR
MARIN OAKS DR
MONTURA WAY
ESQUIRE CT
DICKSON DR
EAGLE PL
OLYMPIA WAY
COUNTRY CLUB DRIVE
FAIRWAY
CAPILANO
PRESTWICK CT
ST ANDREWS DR
PIPING ROCK
PENSACOLA CT
THUNDERBIRD DR
NASSAU CT
WENTWORTH LN
BURNING TREE DR
BROADMOOR CT
CARNOUSTIE DR
BAYWOOD CIRCLE
VIA DEL PLANO
CALLE DE LA MESA
CORTE ESCUELA
1
3
6
8
11
12
17
18
19
21
26
27
28
29
31
32
33
34
39
40
41

Approximate locations of parking nodes.

EXHIBIT 30


IVC
KEY:
HORSE TRAILS
BIKE PATHS
MAJOR ACTIVITY CENTERS ○
TRAIL SYSTEM
NOVATO PLANNING DEPT.
APRIL 1972

Basic Trail System